

MASSACHUSETTS
STATE COLLEGE



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AMHERST, MASSACHUSETTS

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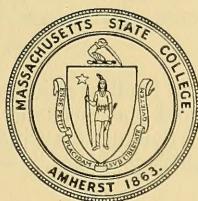
For the Sessions of 1931-1932



MASSACHUSETTS STATE COLLEGE

THE COLLEGE CATALOGUE

This issue of The Bulletin contains the catalogue of the College for the sessions of 1931-32 which is part of the Sixty-Ninth Annual Report of the Massachusetts State College and as such is part II of Public Document 31. (Sec. 8, Chapter 75 of the General Laws of Massachusetts.)



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LEGISLATION PERTAINING TO THE COLLEGE.

Without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and mechanic arts in such manner as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life.—*Act of Congress, July 2, 1862.*

THE COLLEGE CHARTER. — “The leading object of the college shall be to teach subjects relating to agriculture and the mechanic arts, so as to promote liberal and practical education. Its curriculum may include other scientific and classical studies and shall include military tactics.”—*From Chapter 75 of the General Laws of Massachusetts.*

This issue of the catalogue represents the status of the college for the current college year, with provisional announcement of courses of study and other matters for the year to follow. When deemed necessary, additional announcements are made in a supplementary bulletin, published in the spring.

The college reserves, for itself and its departments, the right to withdraw or change the announcements made in its catalogue.

CALENDAR.

1931.

September 16-19, Wednesday-Saturday	Entrance Examinations
September 21, Monday	Fall term begins for Freshmen
September 23, Wednesday	Fall term begins for all except Freshmen
September 30, Wednesday	Fall term begins for Stockbridge School
October 12, Monday	Holiday, Columbus Day
November 11, Wednesday	Holiday, Armistice Day
November 25-30, Wednesday, 12 M.-Monday, 8.00 A.M.	Thanksgiving Recess
December 19, Saturday	Fall term ends

1932.

January 4, Monday, 8.00 A.M.	Winter term begins
February 22, Monday	Holiday, Washington's Birthday
March 19, Saturday	Winter term ends
March 28, Monday, 8.00 A.M.	Spring term begins
April 19, Tuesday	Holiday, Patriots' Day
May 30, Monday	Holiday, Memorial Day
June 3-6, Friday-Monday	Stockbridge School Commencement
June 10-13, Friday-Monday	Commencement
June 16-18, Thursday-Saturday	Entrance Examinations
July 5-August 12	Summer School
September 14-17, Wednesday-Saturday	Entrance Examinations
September 19, Monday	Fall term begins for Freshmen
September 21, Wednesday	Fall term begins for all except Freshmen
October 3, Monday	Fall term begins for Stockbridge School
October 12, Wednesday	Holiday, Columbus Day
November 11, Friday	Holiday, Armistice Day
November 23-28, Wednesday, 12 M.-Monday, 8.00 A.M.	Thanksgiving Recess
December 17, Saturday	Fall term ends

1933.

January 3, Tuesday, 8.00 A.M.	Winter term begins
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THE TRUSTEES.

Organization of 1931.

MEMBERS OF THE BOARD.

	TERM EXPIRES
CHARLES H. PRESTON of Danvers	1932
CARLTON D. RICHARDSON of West Brookfield	1932
DAVIS R. DEWEY of Cambridge	1933
JOHN F. GANNON of Pittsfield	1933
GEORGE H. ELLIS of West Newton	1934
PHILIP F. WHITMORE of Sunderland	1934
JOHN CHANDLER of Sterling Junction	1935
FREDERICK D. GRIGGS of Springfield	1935
NATHANIEL I. BOWDITCH of Framingham	1936
HOWARD S. RUSSELL of Waltham	1936
SARAH LOUISE ARNOLD of Lincoln	1937
JAMES F. BACON of Boston	1937
FRANK GERRETT of Greenfield	1938
HAROLD L. FROST of Arlington	1938

MEMBERS EX OFFICIO.

His Excellency Governor JOSEPH B. ELY of Boston, *President of the Board of Trustees.*

ROSCOE W. THATCHER, *President of the College.*

PAYSON SMITH, *State Commissioner of Education.*

ARTHUR W. GILBERT, *State Commissioner of Agriculture.*

OFFICERS OF THE TRUSTEES.

His Excellency Governor JOSEPH B. ELY of Boston, *President.*

GEORGE H. ELLIS of West Newton, *Vice-President.*

ROBERT D. HAWLEY of Amherst, *Secretary.*

FRED C. KENNEY of Amherst, *Treasurer.*

FRANK GERRETT of Greenfield, *Auditor.*

STANDING COMMITTEES OF THE TRUSTEES.¹

Committee on Finance.

FRANK GERRETT, *Chairman.*

NATHANIEL I. BOWDITCH.

GEORGE H. ELLIS.

JOHN CHANDLER.

HAROLD L. FROST.

DAVIS R. DEWEY.

CHARLES H. PRESTON.

Committee on Faculty and Program of Study.

DAVIS R. DEWEY, *Chairman.*

JAMES F. BACON.

PAYSON SMITH.

JOHN CHANDLER.

JOHN F. GANNON.

ARTHUR W. GILBERT.

Miss SARAH LOUISE ARNOLD.

¹ The President of the College is ex-officio member of each committee.

Committee on Agriculture.

NATHANIEL I. BOWDITCH, *Chairman*.
CARLTON D. RICHARDSON.

FRANK GERRETT.
ARTHUR W. GILBERT.

GEORGE H. ELLIS.

Committee on Horticulture.

HAROLD L. FROST, *Chairman*.
HOWARD S. RUSSELL.
CHARLES H. PRESTON.

JOHN CHANDLER.
PHILIP F. WHITMORE.
FREDERICK D. GRIGGS.

Committee on Experiment Station.

CHARLES H. PRESTON, *Chairman*.
ARTHUR W. GILBERT.
HOWARD S. RUSSELL.

HAROLD L. FROST.
CARLTON D. RICHARDSON.
PHILIP F. WHITMORE.

Committee on Buildings and Grounds.

GEORGE H. ELLIS, *Chairman*.
FRANK GERRETT.
CARLTON D. RICHARDSON.

JAMES F. BACON.
CHARLES H. PRESTON.
PHILIP F. WHITMORE.

Committee on Extension Service.

JOHN CHANDLER, *Chairman*.
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FREDERICK D. GRIGGS.

DAVIS R. DEWEY.
JOHN F. GANNON.
ARTHUR W. GILBERT.

MISS SARAH LOUISE ARNOLD.

OFFICERS OF THE INSTITUTION

AS OF NOVEMBER 1, 1931.

Officers of Administration.

ROSCOE W. THATCHER, D.Agr., LL.D.	President's House
President.	
WILLIAM L. MACHMER, A.M.	25 Amity Street
Dean.	
FRED C. KENNEY	Mount Pleasant
Treasurer.	
FRED J. SIEVERS, M.S.	East Pleasant Street
Director of the Experiment Station and Director of the Graduate School.	
ROLAND H. VERBECK, B.S.	14 Orchard Street
Director of Short Courses.	
WILLARD A. MUNSON, B.S.	101 Butterfield Terrace
Director of Extension Service.	
ROBERT D. HAWLEY, B.S.	South Amherst
Secretary.	
BASIL B. WOOD, A.B.	11 South Prospect Street
Librarian.	
GEORGE E. EMERY, B.S.	31 East Pleasant Street
Field Secretary.	

The Resident Teaching Staff.

(The names of the faculty are arranged in groups according to rank and in sequence according to seniority of service in the institution.)

PROFESSORS.

ROSCOE W. THATCHER, D.Agr., LL.D.	President's House
President.	
WILLIAM L. MACHMER, A.M.	25 Amity Street
Dean of the College and Professor of Mathematics.	
WILLIAM P. BROOKS, Ph.D.	6 Farview Way
Professor of Agriculture, Emeritus.	
HENRY T. FERNALD, Ph.D.	707 East Concord Avenue, Orlando, Florida
Professor of Entomology, Emeritus.	
JOSEPH B. LINDSEY, Ph.D.	47 Lincoln Avenue
Goessmann Professor of Agricultural Chemistry.	
JOHN E. OSTRANDER, A.M., C.E.	33 North Prospect Street
Professor of Mathematics and Head of Department.	
FRANK A. WAUGH, M.S.	Campus
Professor of Landscape Architecture; Head of Department; Head of Division of Horticulture.	
A. VINCENT OSMUN, M.S.	16 Northampton Road
Professor of Botany and Head of Department.	
CLARENCE E. GORDON, Ph.D.	38 Lincoln Avenue
Professor of Zoölogy and Geology; Head of Department of Entomology, Zoölogy and Geology; Head of Division of Physical and Biological Sciences.	
FRED C. SEARS, M.S.	Mount Pleasant
Professor of Pomology and Head of Department.	
JAMES A. FOORD, M.S.Agr.	54 Lincoln Avenue
Professor of Farm Management and Head of Department.	
A. ANDERSON MACKIMMIE, A.M.	North Amherst
Professor of History, Economics and Sociology; Head of Department; Head of Division of Social Sciences.	

ALEXANDER E. CANCE, Ph.D.	9 Fearing Street
Professor of Agricultural Economics and Head of Department.	
JOSEPH S. CHAMBERLAIN, Ph.D.	Mount Pleasant
Professor of Organic and Agricultural Chemistry and Head of Department.	
JOHN C. GRAHAM, B.S.Agr.	68 Lincoln Avenue
Professor of Poultry Husbandry and Head of Department.	
G. CHESTER CRAMPTON, Ph.D.	Fernald Hall
Professor of Insect Morphology.	
CHARLES A. PETERS, Ph.D.	Sunset Place
Professor of Inorganic and Soil Chemistry.	
GEORGE E. GAGE, Ph.D.	Lincoln Block
Professor of Bacteriology and Physiology and Head of Department.	
ARTHUR N. JULIAN, A.B.	4 Farview Way
Professor of German.	
CURRY S. HICKS, B.Pd., M.Ed.	Sunset Avenue
Professor of Physical Education and Hygiene and Head of Department.	
WALTER W. CHENOWETH, M.S.	North Amherst
Professor of Horticultural Manufactures and Head of Department.	
HAROLD M. GORE, B.S.	Plainville Road
Professor of Physical Education.	
CHRISTIAN I. GUNNESS, B.S.	105 Butterfield Terrace
Professor of Agricultural Engineering and Head of Department.	
CHARLES H. PATTERSON, A.M.	26 Lincoln Avenue
Professor of English and Head of Department of Languages and Literatures.	
VICTOR A. RICE, M.Agr.	35 Woodside Avenue
Professor of Animal Husbandry; Head of Department; Head of Division of Agriculture.	
JOHN B. LENTZ, A.B., V.M.D.	3 Dana Street
Professor of Veterinary Science and Head of Department.	
ARTHUR B. BEAUMONT, Ph.D.	51 Amity Street
Professor of Agronomy and Head of Department.	
RALPH A. VANMETER, M.S.	North Amherst
Professor of Pomology.	
EDNA L. SKINNER, M.A.	Fearing Street
Professor of Home Economics; Head of Division; Adviser of Women.	
WINTHROP S. WELLES, M.Ed.	23 Lincoln Avenue
Professor of Agricultural Education and Head of Department.	
CLARK L. THAYER, B.S.	2 Mount Pleasant
Professor of Floriculture and Head of Department.	
WILLIAM C. SANCTUARY, B.S.	5 Allen Street
Professor of Poultry Husbandry.	
CHARLES P. ALEXANDER, Ph.D.	Old Town Road
Professor of Entomology.	
HARRY N. GLICK, Ph.D.	27 Fearing Street
Professor of Agricultural Education.	
WALLACE F. POWERS, Ph.D.	10 Fearing Street
Professor of Physics and Head of Department.	
LEON A. BRADLEY, Ph.D.	Cosby Avenue
Professor of Bacteriology.	
JULIUS H. FRANSDEN, M.S.A.	35 Lincoln Avenue
Professor of Dairy Industry and Head of Department.	
ADRIAN H. LINDSEY, Ph.D.	4 Chestnut Street
Professor of Agricultural Economics.	
ROBERT P. HOLDSWORTH, M.F.	32 Amity Street
Professor of Forestry.	
ERNEST J. RADCLIFFE, M.D.	62 Pleasant Street
Professor of Hygiene and Student Health Officer.	
LYLE L. BLUNDELL, B.S.	15 Sunset Avenue
Professor of Horticulture.	
CHARLES A. ROMEYN, COLONEL, CAVALRY, U. S. A.	59 Lincoln Avenue
Professor of Military Science and Tactics and Head of Department.	

ASSOCIATE PROFESSORS.

WALTER E. PRINCE, A.M.	27 Amity Street
Associate Professor of English.	
ORTON L. CLARK, B.S.	12 College Street
Associate Professor of Botany.	
FRANK PRENTICE RAND, A.M.	3 Mount Pleasant
Associate Professor of English.	

ASSISTANT PROFESSORS.

ARTHUR K. HARRISON	26 Fearing Street
Assistant Professor of Landscape Architecture.	
LAWRENCE S. DICKINSON, B.S.	2 Farview Way
Assistant Professor of Horticulture.	
PAUL SEREX, Ph.D.	Lincoln Avenue
Assistant Professor of Chemistry.	
LUTHER BANTA, B.S.	7 Allen Street
Assistant Professor of Poultry Husbandry.	
FRANK C. MOORE, A.B.	10 Allen Street
Assistant Professor of Mathematics.	
RAY E. TORREY, Ph.D.	Inwood
Assistant Professor of Botany.	
GUY V. GLATFELTER, M.S.	29 Northampton Road
Assistant Professor of Animal Husbandry.	
LLEWELLYN L. DERBY	81 Pleasant Street
Assistant Professor of Physical Education.	
GEORGE W. ALDERMAN, B.A.	Pelham
Assistant Professor of Physics.	
MARSHALL O. LANPHEAR, M.S.	Farview Way
Assistant Dean and Assistant Professor in charge of Freshman Orientation Course.	
WILLIAM H. DAVIS, Ph.D.	12 Nutting Avenue
Assistant Professor of Botany.	
GRANT B. SNYDER, M.S.	North Amherst
Assistant Professor of Olericulture.	
ARTHUR P. FRENCH, M.S.	North Amherst
Assistant Professor of Pomology.	
HELEN KNOWLTON, A.M.	The Homestead
Assistant Professor of Home Economics.	
MERRILL J. MACK, M.S.	32 North Prospect Street
Assistant Professor of Dairying.	
MINER J. MARKUSON, B.S.	16 Nutting Avenue
Assistant Professor of Agricultural Engineering.	
FREDERICK MORSE CUTLER, Ph.D.	103 Butterfield Terrace
Assistant Professor of Rural Sociology.	
MILES H. CUBBON, Ph.D.	29½ Lincoln Avenue
Assistant Professor of Agronomy.	
ROLLIN H. BARRETT, M.S.	4 Chestnut Street
Assistant Professor of Farm Management.	
EDWIN M. SUMNER, Captain, Cavalry, U. S. A.	The Davenport
Assistant Professor of Military Science and Tactics.	
CLAYTON L. FARRAR, Ph.D.	4 Tyler Place
Assistant Professor of Entomology and Beekeeping.	
STOWELL C. GODING, A.M.	North Amherst
Assistant Professor of French and Music.	
S. CHURCH HUBBARD	North Amherst
Assistant Professor of Floriculture.	
WILLIAM H. TAGUE, B.S.	30 Cottage Street
Assistant Professor of Agricultural Engineering.	
WILLIAM H. ARMSTRONG, M.L.A.	13 North Prospect Street
Assistant Professor of Landscape Architecture and Superintendent of Grounds.	
HARVEY L. SWEETMAN, Ph.D.	North Pleasant Street
Assistant Professor of Entomology.	

CLARENCE H. PARSONS, B.S.	Campus
Assistant Professor of Animal Husbandry and Superintendent of Farm.	
MILDRED BRIGGS, M.S.	The Davenport
Assistant Professor of Home Economics.	
MELVIN H. TAUBE, B.S.	50 Pleasant Street
Assistant Professor of Physical Education.	
HERBERT E. WARFEL, M.S.	39 Main Street
Assistant Professor of Zoölogy.	
DWIGHT HUGHES, JR., CAPTAIN, CAVALRY, U. S. A.	7 Spring Street
Assistant Professor of Military Science and Tactics.	

MARGARET HAMLIN, B.A.	12 North East Street
Vocational Counselor for Women.	
MRS. CURRY S. HICKS, B.A.	Sunset Avenue
Physical Director for Women.	
EMORY E. GRAYSON, B.S.	37 Cottage Street
Supervisor of Placement Training.	
J. PAUL WILLIAMS, M.A., B.D.	North Amherst
Director of Religious Education.	

INSTRUCTORS.

GEORGE F. PUSHEE	North Amherst
Instructor in Agricultural Engineering.	
JOHN B. NEWLON	North Amherst
Instructor in Agricultural Engineering.	
CHARLES H. THAYER	South East Street
Vocational Instructor in Agronomy.	
MARY E. M. GARVEY, B.S.	29 South Prospect Street
Instructor in Bacteriology.	
HAROLD W. SMART, A.B., LL.B.	Butterfield Terrace
Vocational Instructor in Farm Law, Business English and Public Speaking.	
LORIN E. BALL, B.S.	3 Allen Street
Instructor in Physical Education.	
MARY J. FOLEY, M.S.	Draper Hall
Instructor in Agricultural Economics.	
OLIVER C. ROBERTS, B.S.	10 Nutting Avenue
Instructor in Pomology.	
HAROLD D. BOUTELLE, B.S., Ch.E.	29 Lincoln Avenue
Instructor in Mathematics.	
LAWRENCE E. BRIGGS, B.S.	3 Allen Street
Instructor in Physical Education.	
HARRY G. LINDQUIST, M.S.	17 Fearing Street
Vocational Instructor in Dairying.	
RANSOM C. PACKARD, B.S.A.	North Amherst
Vocational Instructor in Bacteriology.	
JOHN H. VONDELL	24 Fearing Street
Instructor in Poultry Husbandry and Foreman Poultry Plant.	
DONALD E. ROSS, B.S.	27 South Prospect Street
Instructor in Floriculture and Greenhouse Foreman.	
WAYNE J. LOWRY, B.S.	Mount Pleasant
Instructor in Horticulture.	
RICHARD C. FOLEY, M.S.	The Campus
Instructor in Animal Husbandry.	
ELLSWORTH BARNARD, M.A.	31 East Pleasant Street
Instructor in English.	
FRED C. ELLERT, B.S.	31 East Pleasant Street
Instructor in German.	
JAY L. HADDOCK, B.S.	21 Main Street
Instructor in Agronomy.	
CECIL C. RICE, B.S.	North Amherst
Instructor in Horticultural Manufactures.	

10		P.D. 31.
JAMES ROBERTSON, JR., B.A.		54 Lincoln Avenue
Instructor in Landscape Architecture.		
ALDEN P. TUTTLE, M.S.		120 Pleasant Street
Instructor in Vegetable Gardening.		
G. BERNARD VAN VEGHTEN, B.S.		3 Allen Street
Instructor in Botany.		
ERNEST M. PARROTT, B.S.		North Amherst
Instructor in Chemistry.		
DONALD E. STOFFLET, M.A.		39 Main Street
Instructor in French and Spanish.		
JOSEPH R. ROGERS, JR.		Pelham Road
Instructor in Physical Education.		
CONSTANTINE J. GILGUT, B.S.		3 Allen Street
Instructor in Botany.		
FREDERICK S. TROY, B.S.		31 East Pleasant Street
Instructor in English.		

DEPARTMENT ASSISTANTS.

FRANK T. CANAVAN		102 Pleasant Street
Superintendent of Dairy Manufactures.		
PAUL W. DEMPSEY, B.S.		Waltham
Foreman, Waltham Field Station.		
ALDIS E. FLINT		Pelham Road
Technical Assistant in Bacteriology.		
MIRIAM MORSE, M.S.		87 Pleasant Street
Technical Assistant in Zoölogy and Entomology.		
BRYAN C. REDMON, B.S.		35 North Prospect Street
Laboratory Assistant in Chemistry.		
WALTER E. WEBSTER		99 Main Street
Curator, Goessmann Laboratory.		
HAROLD A. WILSON		Waltham
Technical Assistant, Waltham Field Station.		

GRADUATE ASSISTANTS.

EVELYN A. BEAMAN, B.S.		68 Lincoln Avenue
Department of English.		
ALFRED A. BROWN, B.S.		Phi Sigma Kappa House
Department of Agricultural Economics.		
KENNETH BROWN, B.S.		Mount Pleasant
Department of Landscape Architecture.		
ALBERT H. GOWER, B.S.		77 Pleasant Street
Department of Chemistry.		
ERNEST M. HORSLEY, B.S.		1 College Avenue
Alvord Fellow in Dairying.		
ALFRED HOLWAY, B.S.		46 Claremont Avenue, Holyoke
Department of Agricultural Education.		
FRED W. JONES, B.S.		10½ Kellogg Avenue
Department of Chemistry.		
RUDOLPH O. MONOSMITH, B.S.		29 Main Street
Department of Landscape Architecture.		
WILLIAM J. MOORE, JR., M.S.		35 Lincoln Avenue
Department of Agronomy.		
RALPH F. NICKERSON, B.S.		Cosby Avenue
Department of Chemistry.		
COSTAS NICOLAIDES, B.S.A.		Oneacre
Department of Poultry Husbandry.		
HANS PAPENDIECK, Ph.D.		9 Fearing Street
Department of Agronomy.		
LUCIAN B. SPAULDING, A.B.		Mount Pleasant
Department of Chemistry.		

Part II.

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ALICE G. STILES, B.S.	19 Phillips Street
Department of Bacteriology and Physiology.	
MILDRED A. WEEKS, A.B.	13 Fearing Street
Department of Agricultural Education.	
HAROLD J. WHITE, B.S.	Cosby Avenue
Department of Bacteriology and Physiology.	
INEZ W. WILLIAMS, B.S.	Old Town Road
Department of Entomology.	

The Experiment Station Staff.

ADMINISTRATIVE OFFICERS.

ROSCOE W. THATCHER, D.Agr., LL.D.	President's House
President.	
FRED J. SIEVERS, M.S.	East Pleasant Street
Director.	
JOSEPH B. LINDSEY, Ph.D.	47 Lincoln Avenue
Vice-Director and Head of Department of Plant and Animal Chemistry.	
EDWIN F. GASKILL, B.S.	North Pleasant Street
Assistant to the Director.	
MRS. LUCIA G. CHURCH	North Amherst
Secretary to the Director.	
F. ETHEL FELTON, B.A.	The Davenport
Editorial Assistant.	

PROFESSORS.

EDWARD B. HOLLAND, Ph.D.	28 North Prospect Street
Research Professor of Chemistry.	
A. VINCENT OSMUN, M.S.	16 Northampton Road
Professor of Botany and Head of Department.	
JACOB K. SHAW, Ph.D.	5 Farview Way
Research Professor of Pomology.	
HENRY J. FRANKLIN, Ph.D.	East Wareham
Research Professor in charge of Cranberry Station.	
FRED W. MORSE, M.S.	40 Pleasant Street
Research Professor of Chemistry.	
ARTHUR I. BOURNE, B.A.	12 East Pleasant Street
Research Professor of Entomology.	
CHRISTIAN I. GUNNESS, B.S.	105 Butterfield Terrace
Meteorologist and Head of Department of Agricultural Engineering.	
ARTHUR B. BEAUMONT, Ph.D.	51 Amity Street
Professor of Agronomy and Head of Department.	
FRANK A. HAYS, Ph.D.	Oneacre
Research Professor of Poultry Husbandry.	
WILLIAM L. DORAN, M.S.	31 East Pleasant Street
Research Professor of Botany.	
RAY M. KOON, M.S.	Waltham
Research Professor of Vegetable Gardening; in charge of Waltham Field Station.	
CARL R. FELLERS, Ph.D.	16 Fearing Street
Research Professor of Horticultural Manufactures.	
CHARLES S. GIBBS, D.V.M., Ph.D.	9 Phillips Street
Research Professor of Veterinary Science.	
WALTER S. EISENMENGER, Ph.D.	33 East Pleasant Street
Research Professor of Agronomy.	

ASSISTANT PROFESSORS.

CARLETON P. JONES, M.S.	8 Nutting Avenue
Assistant Research Professor of Chemistry.	
LORIAN P. JEFFERSON, M.A.	62 Pleasant Street
Assistant Research Professor of Agricultural Economics.	

JOHN G. ARCHIBALD, M.S.	North Amherst
Assistant Research Professor of Chemistry.	
JOHN S. BAILEY, M.S.	North Amherst
Assistant Research Professor of Pomology.	
EMIL F. GUBA, Ph.D.	Waltham
Assistant Research Professor of Botany.	
WARREN D. WHITCOMB, B.S.	Waltham
Assistant Research Professor of Entomology.	
JAMES E. FULLER, Ph.D.	14 Nutting Avenue
Assistant Research Professor of Bacteriology.	
LINUS H. JONES, Ph.D.	1 Allen Street
Assistant Research Professor of Botany.	
*RONALD L. MIGHELL, M.S.	
Assistant Research Professor of Farm Management.	
DAVID ROZMAN, Ph.D.	62 Pleasant Street
Assistant Research Professor of Agricultural Economics.	
WILLIAM S. MUELLER, M.S.	Pelham Road
Assistant Research Professor of Dairying.	
HAROLD E. WHITE, M.S.	Waltham
Assistant Research Professor of Floriculture.	
ROBERT E. YOUNG, M.S.	Waltham
Assistant Research Professor of Vegetable Gardening.	
BERNICE C. WAIT, Ph.D.	The Davenport
Assistant Research Professor of Home Economics.	

EXPERIMENT STATION ASSISTANTS.

HARRY L. ALLEN	89 Main Street
Laboratory Assistant in Chemistry.	
ALYN S. BALL	94 Main Street
Laboratory Assistant in Botany.	
EMMETT BENNETT, B.S.	42 Lincoln Avenue
Research Assistant in Chemistry.	
JOHN A. CLAGUE, M.S.	Cosby Avenue
Research Assistant in Horticultural Manufactures.	
MAURICE M. CLEVELAND, B.S.	North Pleasant Street
Fellow, Department of Horticultural Manufactures.	
WALTER L. CUTLER	Butterfield Terrace
Technical Assistant in Pomology.	
J. ELIZABETH DONLEY, A.B.	3 McClellan Street
Laboratory Assistant in Agricultural Economics.	
EDWARD B. DONNELLY	Waltham
Technical Assistant in Floriculture.	
MARY C. HUGHES	19 Phillips Street
Laboratory Assistant in Pomology.	
PAUL D. ISHAM, B.S.	80 Pleasant Street
Fellow in Horticultural Manufactures.	
WILLIAM L. JONES, M.S.	35 Lincoln Avenue
Fellow, Department of Agronomy.	
JOHN W. LOCKE	Tillson Farm
Poultry Plant Foreman.	
OREANA A. MERRIAM, B.S.	34 Lincoln Avenue
Laboratory Assistant in Home Economics.	
GLADYS I. MINER	87 Pleasant Street
Herbarium Curator.	
LEONARD R. PARKINSON	Goessmann Laboratory
Technical Assistant in Animal Nutrition.	
RUBY SANBORN, A.B.	30 Fearing Street
Research Assistant in Poultry Husbandry.	
RUTH E. SHERBURNE, B.S.	62 Pleasant Street
Research Assistant in Agricultural Economics.	

* On leave of absence.

Part II.

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MOSES E. SNELL	Brooks Farm
Technical Assistant in Agronomy.	
*JAMES E. THIGPEN, B.S.	8 Dana Street
Research Assistant in Farm Management.	
MADALINE V. VOORNEVELD, B.S.	35 Northampton Road
Laboratory Assistant in Home Economics.	
DORIS E. WASHBURN, A.B.	The Davenport
Research Assistant in Farm Management.	

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PHILIP H. SMITH, M.S.	102 Main Street
Chief of Laboratory, Feed Control.	
HENRY VAN ROEKEL, M.S., D.V.M.	Lincoln Block
Chief of Laboratory, Poultry Disease Control.	
FREDERICK A. McLAUGHLIN, B.S.	4 Nutting Avenue
Assistant Research Professor, Seed Control.	
H. ROBERT DeROSE, M.S.	Farview Way
Assistant Chemist.	
GLEN L. Dunlap, D.V.M.	53 Lincoln Avenue
Assistant Veterinary Pathologist.	
RALPH L. FRANCE, M.S.	Mount Pleasant
Assistant Bacteriologist.	
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Assistant Research Professor.	
MIRIAM K. CLARKE, A.B.	87 Pleasant Street
Laboratory Assistant.	
ALBERT F. SPELMAN, B.S.	Cosby Avenue
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GEORGE J. LARSINOS, M.S.	35 East Pleasant Street
Junior Chemist.	
JAMES T. HOWARD	North Pleasant Street
Inspector.	
MARGARET NAGLE	62 Pleasant Street
Laboratory Assistant.	
FELICIA ZIMNOSKI	Sunderland
Laboratory Assistant.	

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State Leader of County Agricultural Agents.	
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State Leader of County Club Agents.	
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* Temporary appointment.

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Assistant State Leader of County Club Agents.	
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Assistant State Leader of County Club Agents.	
HELEN E. DOANE	62 Pleasant Street
Assistant State Leader of Home Economics Clubs.	

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Extension Specialist in Poultry Husbandry.	
WILLIAM R. COLE	33 Fearing Street
Extension Specialist in Horticultural Manufactures.	
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Extension Specialist in Animal Husbandry.	
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Extension Specialist in Farm Management.	
WILBUR H. THIES, M.S.	Kendrick Place
Extension Specialist in Pomology.	
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Extension Specialist in Agricultural Economics.	
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Extension Specialist in Agronomy.	
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Extension Specialist in Plant Pathology.	
WELLESLEY C. HARRINGTON, M.E.	5 Sunset Avenue
Extension Specialist in Agricultural Engineering.	
ROY E. MOSER, M.S.	3 Fearing Street
Extension Specialist in Farm Management.	
MAY E. FOLEY, M.A.	6 Nutting Avenue
Assistant Extension Specialist in Nutrition.	
MRS. ESTHER C. PAGE, B.S.	Sunderland
Assistant Extension Specialist in Home Economics.	
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Assistant Extension Specialist in Home Economics.	
MRS. RUTH D. MORLEY, B.S.	23 Amity Street
Assistant Extension Specialist in Child Development.	
ELLSWORTH W. BELL, M.S.	2 Tyler Place
Assistant Extension Specialist in Agricultural Economics.	
MARY POZZI	6 Nutting Avenue
Assistant Extension Specialist in Home Economics.	
ARNOLD M. DAVIS, B.S.	26 Fearing Street
Assistant Extension Specialist in Horticulture.	
GRACE B. GERARD, B.S.	The Davenport
Assistant Extension Specialist in Home Furnishing.	
ROBERT B. PARMENTER, B.S.	20 Somerset Street, Boston
Extension Forester.	

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MARY G. FLINT, B.S., Home Demonstration Agent	Barnstable
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SUSAN V. HILL, B.A., Home Demonstration Agent	Berkshire

Part II.

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BLANCHE W. EAMES, Home Demonstration Agent	Bristol
EDWIN R. WYETH, B.A.S., Club Agent	Bristol
DOROTHY M. STEWART, B.S., Assistant Extension Agent	Bristol
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FRANCIS C. SMITH, B.S., Agricultural Agent	Essex
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LENA V. CHAPMAN	3 Kendrick Place
Assistant in charge of circulation.	

HERBERT A. GOODELL, B.S.	South Pleasant Street
Library Assistant.	
HERMON U. GOODELL, B.S.	South Pleasant Street
Library Assistant.	
KATHERINE POWELL	6 Phillips Street
Department Librarian.	
BESSIE M. WEYMOUTH	Butterfield Terrace
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Other Officers.

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JOHN K. BROADFOOT	130 Pleasant Street
Assistant Treasurer.	
AFFIE M. COOK	13 Phillips Street
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GRACE E. GALLOND	10½ Kellogg Avenue
Assistant to the Dean.	
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Manager of the Dining Hall.	
MRS. GRACE E. HILL	North College
Matron, North College.	
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Superintendent of Buildings.	
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Resident Nurse.	
MRS. MARY MACRAE	Infirmary
Matron.	
MRS. MAUD MARSHALL	Abigail Adams House
House Mother.	
ELIZABETH B. STRACHAN	17 High Street
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1931-1932.

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GENERAL INFORMATION.

HISTORICAL SKETCH.

One of the outstanding achievements of the middle of the nineteenth century was the remarkable development in the field of science. This, in turn, brought about great changes in industry, transportation and agriculture and stimulated the desire for new information and further training. People were enthusiastic about the possibilities of the future. It is not surprising, therefore, that scientific courses gradually found their way into the academies and colleges. This was not without opposition from the friends of the old classical training, however. In many instances institutions founded along literary and philosophical lines did not favor the introduction of courses based on the needs of students desiring to perfect themselves in the technical principles and practices of the arts and industry. The demand for such courses increased nevertheless. It was evident that the old order of education was changing but at the time the new was not apparent. It was under such conditions that the Massachusetts State College had its birth.

THE MORRILL ACT.

This demand for technical education finally crystallized into a bill before Congress known as the Morrill Act of 1862 endowing colleges for this purpose in every state of the Union. The original bill was framed by Senator Justin L. Morrill of Vermont and its final enactment obtained under his leadership. This bill provided in each state for "the endowment for and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanics arts in such manner as the legislatures of the states may respectively prescribe in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." Massachusetts accepted the provisions of the Morrill Act in 1863 by founding a new college at Amherst to be known as "Massachusetts Agricultural College" and Chapter 75 of the General Laws of the Commonwealth states that "the leading object of the College shall be to teach subjects relating to agriculture and the mechanics arts so as to promote liberal and practical education. Its curriculum may include other scientific and classical studies and shall include military tactics."

FOUNDING AND EARLY GROWTH OF THE COLLEGE.

The Trustees of the Massachusetts Agricultural College were incorporated in 1863 and officers were appointed in that year. It was not until October 2, 1867, however, that the institution at Amherst was formally opened to students. At that time there were four teachers on the faculty and four wooden buildings on the campus. The number of students steadily increased during the first term and by December, 1867, forty-seven had been admitted. From this modest beginning the College has grown steadily and its influence has been felt in many parts of the world. On April 15, 1931, the name of the institution was changed by legislative enactment to Massachusetts State College.

SCOPE OF THE INSTITUTION.

In a sense, experimental work is as old as the institution, for during its earliest years some very important investigations were carried on by the instructors. Research work was established as a separate unit, however, in 1882, when the State provided for the establishment of an agricultural experiment station here. In 1887 another experimental unit, the Hatch Experiment Station, was provided by Federal appropriation. These two stations were combined in 1895 and have since been known as the Massachusetts Agricultural Experiment Station.

State law also provides for the maintenance at this College of a Control Service the purpose of which is to regulate the sale of certain agricultural products for the protection of purchasers and also to eliminate certain diseases of poultry.

The Extension Service of the College was established in 1912 and was first supported by grants of Federal Funds in 1914. This division of the College

undertakes the large responsibility of teaching adults and boys and girls throughout the State, who cannot come to the College for instruction, better methods in agriculture and home-making. Approximately 285,000 people in the Commonwealth received help in 1930 through this Extension Service.

RESIDENT INSTRUCTION.

Opportunities for resident instruction have greatly expanded since the founding of the College in 1863. The courses offered now include such short courses as the Winter School, Summer School, and the two-year course in practical agriculture known as the Stockbridge School. Then, there are the four-year course leading to the Bachelor of Science degree and the Graduate School which offers opportunity for study for advanced degrees. The undergraduate curriculum leading to the Bachelor of Science degree offers opportunity for specialization in Agriculture, Home Economics, Horticulture, Landscape Architecture, Physical and Biological Sciences and Social Sciences. The curriculum includes strong supporting courses in the Humanities and the aim is to give to each student as high a degree of efficiency in some particular branch of learning as is possible without sacrificing the breadth of knowledge and training which should characterize the well-rounded college course.

VOCATIONS OF GRADUATES.

The vocations in which the majority of graduates of the College are engaged give an idea of the sort of training which is provided. The largest number are serving as teachers in schools and colleges or as specialists in Extension education. The various phases of agriculture attract the next largest number and others listed in order are industrial workers, landscape architects and engineers, research experts and technologists in such scientific fields as chemistry, botany, entomology, bacteriology, etc.; professional practitioners such as physicians, lawyers, ministers, and a wide variety of miscellaneous callings.

PRESIDENT'S STATEMENT.

In connection with the dedication of the Physical Education Building, President Thatcher made the following statement concerning the type of education offered at this College: "The type of education which this College offers deals largely with the physical phenomena of the universe and of human life. This is the so-called 'scientific' training. When carried to extremes of application, it becomes 'industrial' or 'vocational' education; but when combined with a proper study of human social relationships, it is 'education for citizenship.'

"A state-supported college like ours should, of course, do all that it can to increase the capacity of its students for enjoyment of life and for participation in society, but its chief duty is to prepare its students to contribute to the physical welfare and the development of material prosperity of the state and nation which provide the facilities for this type of education.

"A college course at such an institution must provide for intellectual development as well as for the acquirement of skilled knowledge of the physical facts of science by its students. And it ought also to give them sound bodies and correct habits of physical life, in order that they may have adequate health and strength to carry an active share in the work of the world. It may properly go even so far as to encourage in its students the habit to 'play the game' of life in accordance with established rules and in the spirit of true sportsmanship, which seeks to win for oneself at the same time that every rightful opportunity is given to others.

"Our ideal in education then is to prepare our students for citizenship by giving them a trained mind, a useful knowledge of the principles of science and the facts of the physical universe, a healthy body and correct habits of physical life, and a keen sense of one's duties to and relationships with others. 'A sound mind in a healthy body' is what we hope will result from a course of training at Massachusetts State College."

THE COLLEGE CAMPUS.

Hand in hand with this steady growth of the College, there has come a marked expansion in physical equipment. The original farm of 1867, with its run-down fields and degenerated apple orchards cut up here and there by old Virginia rail

fences and hedge rows has metamorphosed into one of the most attractive college campuses in New England. A brief statement of land, buildings and equipment will show to what extent the original four wooden buildings have been out-grown.

LOCATION AND LANDS.

The State College is located in Amherst, a town of about six thousand people, overlooking one of the most picturesque sections of the Connecticut Valley. From the standpoint of teaching material in the field of science and agriculture, the location is ideal. Amherst is ninety-seven miles from Boston and may be reached by the Central Massachusetts division of the Boston & Maine Railroad, or by the Central Vermont Railroad. Electric cars also connect the town with Northampton, Holyoke, and Springfield. The campus consists of a tract of approximately seven hundred acres, lying about a mile north of the village center. In addition the college owns another area of seven hundred and fifty-five acres located about six miles north of the campus on Mount Toby. This is used for a demonstration forest.

BUILDINGS AND EQUIPMENT.

The campus is laid out in the form of an oval attractively set off by the college pond in the center. Around this oval are grouped the main buildings of the college. In the following list the buildings are presented in order about this oval.

South College.—Here are located the administrative offices, including the offices of the President, Dean, Treasurer, Secretary, the Extension Service, Short Courses, and Women's Adviser. The Department of Agricultural Economics also has offices here. The west wing is used as a freshman dormitory. This accommodates about forty students. Erected 1885.

North College.—This has been recently remodelled as a freshman dormitory accommodating about seventy-five men students. A large living room serves as the center of freshman social life on the campus. North College was erected in 1867.

Flint Laboratory.—The work in Dairy Manufactures is carried on here. The building is well equipped with modern machinery for the production of market milk, ice-cream, butter and cheese. This building was erected in 1911 and was named in honor of Charles L. Flint, fourth president of the college.

Stockbridge Hall.—Here are located the departments of Agronomy, Animal Husbandry, Agricultural Engineering, Farm Management, Poultry Husbandry, Education and English. In addition to the lecture rooms and offices are laboratories for soil fertility, field crops, poultry, and a drafting room for engineering. The clothing and house furnishing laboratories for the Home Economics Department are also located here. In the rear of the building are the greenhouse and head house used by the Department of Agronomy for work on crops and soils. A special reference library for the Division of Agriculture is on the second floor. Bowker Auditorium, the largest auditorium on the campus, is also in this building. It has a seating capacity of nine hundred and is named in honor of William H. Bowker, a member of the first graduating class, later a Trustee of the College, and one of the pioneers in the fertilizer industry. Stockbridge Hall was erected in 1914 and named in honor of Levi Stockbridge, a former president and professor of Agriculture in the college.

Horticultural Manufactures Laboratory.—Erected in 1929. Both research and instructional work in food preservation are carried on here. The laboratories are well equipped with modern apparatus used in this rapidly developing field.

Grinnell Arena.—Erected in 1910 primarily for livestock judging. An abattoir was constructed in 1930 as an addition to the original building. Named in honor of James S. Grinnell, for twenty-two years a trustee of the College.

Agricultural Engineering Laboratory.—Included in this laboratory for students of Agricultural Engineering, located a short distance back of Stockbridge Hall, are a carpenter shop, general repair shop, and a laboratory for farm machinery and motors. The building was erected from 1916 to 1924.

Draper Hall.—The college dining hall is located in Draper. The main dining room has a seating capacity of three hundred and seventy. In addition there is

a cafeteria in the west wing which can accommodate about ninety-five at one time. The capacity of the dining hall during a normal meal hour is about six hundred although as many as one thousand can be accommodated. There is a small banquet room on the second floor and several dormitory rooms. Erected 1902 and subsequently, and named in honor of James Draper, for twenty years a trustee of the college.

Goessmann Laboratory.—This is a modern chemical laboratory. The building is approximately two hundred feet by eighty feet and contains eight large laboratory rooms, a large auditorium, a chemical library, and lecture rooms. The east wing of the third floor is occupied by the research professors in Chemistry of the Experiment Station. In addition to the work in Chemistry the class work in German is held in this building. Goessmann Laboratory was erected in 1924 and named in honor of Charles A. Goessmann, the first professor of Chemistry at the college.

West Experiment Station.—The state control work is centralized here. Fertilizers, seeds, and feeds are analyzed or inspected in accordance with the state law, to determine whether or not they meet their guarantee. Erected 1886.

East Experiment Station.—The office of the Director of the Experiment Station and other administrative offices of the Experiment Station are located in this building.

Abigail Adams House.—This is a modern girls' dormitory accommodating about one hundred students. It was erected in 1919 and named for Abigail Adams, a staunch believer in farm life, the wife of John Adams, second President of the United States. In the rear of the building is a large athletic field used in connection with the physical training of the women students.

The Homestead.—Girls majoring in Home Economics receive their Home Management practice in the Homestead. It is a remodelled colonial farmhouse newly equipped with all the modern conveniences of the home.

Bacteriology and Physiology Laboratory.—This building, erected in 1915, is especially designed to carry on work in Bacteriology as it relates to soil, industry, dairying, foods and public health. There are four class laboratories, several private laboratory rooms and offices and a lecture room. In addition there are incubator rooms, sterilizing rooms, hood rooms, washing rooms, inoculating rooms, weighing rooms, an animal room, a photographic and dark room, and a sub-basement refrigerator room. There is also a well-equipped library containing books and current periodicals useful in the conduct of bacteriological and physiological work and investigation.

Infirmary.—The Infirmary consists of two small cottages on the hillside east of the Bacteriology Laboratory. They are especially designed to care for sick or injured students. A trained nurse is on duty at all times.

Physics Building.—This is a wooden building erected in 1867. It contains a well-equipped laboratory for work in college Physics and also one lecture room.

Wilder Hall.—Here are located the departments for Landscape Architecture and Pomology. The building is chiefly devoted to classrooms, drafting rooms, and offices. It was erected in 1905 and named in honor of Marshall P. Wilder, a pioneer in the movement for agricultural education in Massachusetts and one of the first trustees of the college.

Fisher Laboratory.—This is a well planned and equipped fruit packing and storage house. It includes six refrigerator rooms, four storage rooms not refrigerated, one large laboratory room, one class room besides ample storage space for fruit packages and equipment. The equipment for the building itself includes four types of apple sizers, packing tables and box and barrel presses of various types, besides all kinds of packages with smaller equipment necessary for thoroughly modern work in grading and packing fruit. This building is used by the Pomology Department and was named in honor of Jabez Fisher, one of the foremost, early horticulturists of the State. Erected 1910. Just east of Fisher Laboratory is the Horticultural Manufactures shed containing equipment for making cider, vinegar, and maple syrup.

French Hall.—French Hall houses the departments of Floriculture, Forestry, Horticulture and Vegetable Gardening. It is also the headquarters of the North-

eastern Forest Experiment Station. The classroom work in Economics, Sociology, French and Spanish is also given here. Just to the rear of the building is the new Durfee range of greenhouses, devoted to the growing of carnations, roses, chrysanthemums, violets, etc. One house is maintained as a conservatory and contains a collection of plants used primarily for decorative purposes. Another house is devoted to greenhouse vegetables. The old Durfee range located just to the north of French Hall is used chiefly for the growing and maintenance of a collection of conservatory plants. There are also many of economic value such as the bamboo, camphor tree, guava, palm, etc. French Hall was erected in two sections; the first in 1908, the second in 1913. It was named in honor of Henry S. French, the first president of the college.

Clark Hall.—Here are located the offices, lecture rooms and laboratories of the Department of Botany. In addition to the main building, there is a greenhouse used for research and laboratory purposes. The herbarium contains about twenty thousand sheets of seed plants and ferns, twelve hundred sheets of liverworts and mosses and a collection of twenty-five thousand specimens of fungi. The office and laboratory of plant pathology of the Northeastern Forest Experiment Station also are located in this building. Erected in 1906 and named in honor of William S. Clark, president of the college and professor of Botany from 1867 to 1879.

Fernald Hall.—This building, erected in 1909, was named in honor of Professor Charles H. Fernald, who served the college for twenty-four years, built up a strong department in Zoölogy, created the department of Entomology, and acted as Director of the Graduate School. Fernald Hall houses the Department of Entomology, Zoölogy and Geology. In addition to laboratories, lecture rooms, and offices, there is a Geological Museum, a Zoölogical Museum and a collection of over 160,000 insects. Material in these collections is available for study and for exhibition purposes. In the basement is located the cooking laboratory of the department of Home Economics.

Mathematics Building.—This is a small frame building containing classrooms for instruction in mathematics and surveying. There is also a well equipped drafting room, and a small one devoted to blue-printing.

Paige Laboratory.—The work in Veterinary Science is located in this building. In addition to the class, lecture, and laboratory rooms, there are the laboratories for the State Control and Research work on animal diseases. The museum contains a growing number of anatomical and pathological specimens, most of which are used for teaching purposes. In the rear of the building are the stables for housing both laboratory and larger animals under isolation conditions for dissection, post mortem examinations and for incineration purposes. Paige Laboratory was erected in 1898 and named for James B. Paige, professor of Veterinary Science from 1891 to 1922.

Physical Education Building.—This building dedicated at Commencement in 1931, offers splendid modern facilities for physical education including a swimming pool 75 by 30 feet, an exercise hall 150 by 180 feet, locker rooms, baths, hand ball court, and other modern facilities. Of the total cost of \$287,000, alumni and friends of the college contributed \$115,000; the remainder was appropriated by the State Legislature.

Drill Hall.—This building houses the Department of Military Science. It also contains locker and dressing rooms for women students and a large exercise hall for their work in physical education.

Alumni Field.—This tract of land was transformed into an Athletic Field, containing a baseball diamond, football field, and cinder track, by the Alumni and friends of the college. Completed 1915.

Memorial Hall.—The social center of student life is Memorial Hall. It was erected by the Alumni, students, faculty and friends of the college in memory of those men of this college who died in the World War. In the basement are bowling alleys, pool tables, a store, post office and barber shop. On the main floor are eight offices for the leaders of various student activities, a large reading room and a beautiful Memorial Room in which is found a tablet bearing the names of the sons of the college who gave their lives in the Great War. On the second floor is an auditorium seating 350 persons. This room is also used for college dances. Memorial Hall was erected in 1921.

Library.—The Library contains one of the best collections in agriculture and related sciences in the country, with especial strength in entomology, botany, chemistry, horticulture, landscape architecture, soil science and animal husbandry, but with considerable collections also in literature, history, economics and sociology. There are over 90,000 bound books, and over 50,000 classified pamphlets giving most recent information. The periodical file contains over 550 current magazines, both scientific and popular, and a careful selection of newspapers, together with many periodical publications of learned societies. The Library is unusually rich in files of journals and proceedings of Experiment Stations and learned societies. The building is open on week days from 8 A.M. to 10 P.M., and from 1:30 to 4:30 and 7 to 9 P.M. on Sundays during terms, and with somewhat shorter hours during vacations and Summer School. The fine granite building was erected in 1885 and originally housed both College Chapel and Library.

Power Plant.—Heat and light are supplied to all the buildings on the campus from a central power plant. This was erected in 1902 and has been subsequently remodeled.

FARM BUILDINGS, LAND AND EQUIPMENT.

College Farm and Barns.—The college farm consists of 240 acres located just west of South College. Most of it is suitable for cultivation and is operated in regular rotation. Much of the farm as it now stands has been made productive by tile draining and clearing the land of brush and stumps. The principal crops raised are those which can be utilized by the livestock, together with some cash crops such as cabbage, carrots, potatoes, and hay. For instructional work the farm is available for study in field crops, planning of crop rotation, practical field operation of farm machinery and tractors and farm management. The livestock of the farm consists of about 165 head of registered cattle which are excellent representatives of the Ayrshire, Guernsey, Holstein, Jersey, Milking Shorthorns, and Hereford breeds, a considerable number of registered Berkshire and Chester White swine, a flock of about 100 Shropshire and Southdown sheep and 20 Percheron horses. These animals are used chiefly for demonstrational and instructional work in feeding and herd management and in the teaching of correct types by much practice in judging. The farm buildings are model structures for their various purposes. They were erected in 1909 and subsequently. The dairy barns contain efficient and modern equipment for their respective purposes. The sheep barns and piggery are located several hundred yards from the dairy barns.

Cavalry Stable.—This stable has a capacity for the sixty horses which are used by the M. S. C. Cavalry troop. This building is maintained by Federal expense. Erected in 1925.

Poultry Plant.—The college poultry plant consists of about twenty acres of land in addition to the various buildings that go to make up a modern poultry plant. Although only eight acres of the land comprising the plant are college-owned this quantity permits for a three-year growing rotation. The plant will accommodate 2,000 laying birds and has growing facilities for about 7,000 chicks. The incubator capacity of the plant is approximately 12,000 eggs at one time. Located about one-half mile east of the college on East Pleasant Street, is the experimental poultry farm which accommodates about 1,200 adult birds and has hatching facilities for about 3,000 chicks. Here experiments on breeding poultry for egg production and disease control are carried on under strict quarantine.

The Hatch Barns.—These structures house the live stock which have been segregated from the main herd and flocks for the purpose of experimentation in connection with the subject of feed and feeding. Erected in 1891.

Experiment Station Barns.—These buildings contain the equipment and animals used in connection with the work of the Experiment Station.

Orchards and Vineyards.—The college orchard contains about 20 varieties of peaches, 25 of plums, 20 of pears, and 100 of apples. Common varieties of grapes are grown in the vineyards and with the various approved trellis systems. These orchards are used for teaching material in Pomology.

Vegetable Gardens.—Here are grown the class material used by the vegetable gardening department.

Mt. Toby Demonstration Forest.—This is an area of approximately 750 acres located on Mt. Toby. It contains the various types of forest growth found throughout the State. It serves as a field laboratory in forestry. Students have the privilege of working out problems in silviculture, forest mensuration and management. Improvement cuttings, cuttings for utilization and forest planning are conducted here also.

COURSES OF INSTRUCTION.

COURSES LEADING TO A DEGREE.

Four-Year Course.—The degree of Bachelor of Science is granted to those students who satisfactorily complete the regular four-year course. Special arrangement is made for some graduates of county agricultural schools to receive the degree Bachelor of Vocational Agriculture for four years of college work.

Five-Year Course in Landscape Architecture.—A five-year course is offered in Landscape Architecture leading to the degree of Bachelor of Landscape Architecture.

Graduate School.—The degrees of Master of Science, Master of Landscape Architecture and Doctor of Philosophy may be granted upon the completion of satisfactory study, research and a thesis.

Summer School.—Both graduate and undergraduate courses are offered in the six weeks' summer school and credits earned may apply toward the Bachelor's degree or advanced degrees.

NON-DEGREE COURSES.

Several short courses in agriculture are offered which do not lead to a degree. These are for the benefit of those who are not prepared to take the degree course or who desire only a practical training in modern agriculture methods.

Stockbridge School of Agriculture.—This is a two-year course in practical agriculture offering a high type of training to those who wish to enter some special agricultural enterprise. A separate descriptive catalogue will be sent on request.

Winter School.—A ten weeks' practical course in agricultural and horticultural subjects begins about January first each year. The courses are so arranged that a student may choose such subjects as will enable him to specialize in the line of work in which he is most interested.

HEALTH SERVICE.

The College endeavors to safeguard the health of all students while on the campus, and for this purpose maintains a Physician as Supervisor of Student Health, a resident registered nurse, and a small infirmary.

- (1) Physical examination by the Supervisor of Student Health is required of all undergraduate students annually, or oftener if indicated. This examination is given to freshmen during matriculation week. Entering women are also required to present an examination certificate from their family physician on forms supplied by the College.
- (2) The Supervisor of Student Health has offices in the Physical Education Building where he may be consulted during college hours.
- (3) Infirmary—Its purpose is to furnish a suitable place for professional attention in case of illness or accident. The out-patient clinic is held here daily.
- (4) Students are urged to consult the Supervisor of Student Health or the resident nurse at the first sign of physical disorder or for even minor accidents. Many severe illnesses and much lost time can be avoided by early or preventive treatment.
- (5) The infirmary charges will be at the rate of \$2 per day, and will be charged when one or more meals are obtained at the infirmary or when the student remains at the infirmary for one or more nights. A nominal charge may be made to out-patients for miscellaneous treatment of a minor character.

- (6) In addition to the fee charged as specified in paragraph 5, the following additional expenses will be charged to the patient.
- (a) *Nurses*.—In case a special nurse is required for the proper care of an individual the services and board of this nurse will be paid by the patient. Such a nurse will be under the general supervision of the resident nurse.
 - (b) *Professional Service*.—If a student requires continuous medical attention by a physician, he may be required to select his physician and become responsible for fees charged by that physician.
 - (c) *Supplies*.—Special medical supplies prescribed by a physician will be charged to the patient.
 - (d) *Laundry*.—Expense for personal laundry incurred by students while in the infirmary will be charged to the individual student.

STUDENT EXPENSES.

Student college expenses vary from approximately \$450 per year to \$600 for the normal economical student. First year expenses are usually greater than those of the other three years and there is less opportunity in this year to earn. It is, therefore, recommended to the entering student that he have available at least \$450 with which to meet the expenses of the first year. Women students are recommended to plan on a minimum expense of \$550.

The following summary of a year's expenses includes only those items which are strictly college costs and does not include amounts for clothing, travel, etc., which vary with the individual. Tuition for residents of Massachusetts is \$60 and for others \$180.

	Low	Normal
Tuition (citizens of Massachusetts)	\$60.00	\$60.00
Matriculation fee (first year)	5.00	5.00
Room in college dormitory or in private house	70.00	140.00
Board, \$7.00 per week (College Dining Hall)	233.00	233.00
Laundry, 50 to 85 cents a week	18.00	30.00
General Laboratory fee	12.00	12.00
Health fee	4.50	4.50
Books, stationery and miscellaneous items	60.00	90.00
	\$462.50	\$574.50

GRADUATION REQUIREMENT.

No student will be graduated unless all bills due the college are paid on or before the Wednesday preceding the graduation exercise. If paid after that date and otherwise eligible he may graduate the following year.

INITIAL PAYMENT FOR FRESHMEN.

The initial payment required of freshmen at the time of fall registration is approximately \$180 and is made up of the following items:

Tuition (citizens of Massachusetts)	\$20.00
Room rent (dormitory)	34.00
General Laboratory fee	4.00
Health fee	1.50
Locker fee	1.00
*Athletic tax	5.00
*Academic Activities tax	3.00
*Social Union tax	1.00
Board (College Dining Hall)	84.00
Military uniform (men only)	19.50
Matriculation fee	5.00
*Class tax	.50
*Religious work tax	.25
*Student Band tax	.25

\$179.00

* These taxes are for the support of student activities and entitle each student to free participation in the various enterprises which they represent.

REFUNDS.

A student who leaves college for any reason before a term is half completed will have refunded to him one-half the fees paid for that term; but one who leaves after a term is half over will be allowed no rebate of fees and a refund of only unused board and room charges.

COLLEGE FEES.

Matriculation Fee.—All students entering the college for the first time as undergraduates are charged a matriculation fee of \$5 which, in the event of a student leaving the institution, is returned, if all bills due the college are paid, or is, upon graduation, considered as payment for the diploma.

Tuition.—Residents of Massachusetts are charged a tuition fee of \$60 per year, payable in advance in three installments of \$20 each on the first day of each term. For those who are not residents of Massachusetts, the tuition fee is \$180 per year. Students entering from Massachusetts are required to file with the Treasurer a statement signed by town or city clerk, stating that the applicant's father is a legal resident of Massachusetts.

General Laboratory Fee.—A fee of four dollars per term is charged to cover the cost of laboratory materials used and incidental supplies for various courses.

Health Fee.—A fee of one and one-half dollars per term is charged to cover the cost of the student health service maintained by the College.

Locker Fee.—This fee of one dollar per term provides the student with locker and towel service at the Physical Education Building.

Military Uniform.—All students taking military drill are required to make a deposit of \$19.50 for the uniform. A rebate of \$15 is made when this uniform is returned.

BOARD.

All freshman students are required to board at the college dining hall. The cost of board is \$233 per year payable in advance as follows:

At the opening of college	\$84.00
At beginning of winter term	76.00
At beginning of spring term	73.00

For absences of one week or more rebates at the rate of \$5.60 per week may be granted provided the absence is authorized by the Dean, and the rebate approved by the Treasurer. No rebates will be allowed for absences of less than one week. But in case a student resides nearby and for this or any similar reason is regularly absent from the campus over week-ends, upon request of his parent or legal guardian, approved by the Dean of the College or Director of Stockbridge School, he may board in the college dining hall for a five-day week (fifteen consecutive meals beginning with Monday breakfast) at the rate of 80 per cent of that paid for a seven-day week.

Individual members of upper classes may choose to board in the college dining hall at the regular rates or in the college cafeteria, or at private dining places. But all residents in college dormitories who do not eat in the college dining hall must purchase in advance for each term cafeteria meal tickets amounting to \$7 per week. A schedule of standard meals furnished in the cafeteria is provided and at least \$7 worth of these meals must be purchased by each ticket holder each week. Extras at any meal must be paid for in cash when selected at the serving table.

Groups of upper class men or women may arrange for group table service in the dining hall by payment for a term in advance of the rates for board as indicated for freshmen.

Excuses from compliance with these regulations concerning board shall be made only by the Treasurer of the College, who may require a recommendation in individual cases from the Student Health Officer, if the excuse is requested for health reasons, or from the Dean if the reason has to do with the student's academic opportunities.

ROOMS.

All freshman students are expected to room in college dormitories unless excused by the Dean. Registration for freshman girls will be closed as soon as

all available dormitory space has been assigned. Men students who cannot be accommodated in dormitories will be permitted to live in approved private homes. An application for a room cannot be filed until the student has been accepted for entrance. A \$15 deposit, made payable to the Treasurer of M. S. C., must accompany the application. In case of withdrawal before August 20, this will be refunded. As far as is feasible, rooms will be assigned in the order in which applications for the same are received. The student will be notified as soon as the assignment is made. Dormitory rooms rent for from \$27.50 to \$45.50 per term.

Rooms for Men.—Dormitory accommodations are available for about one hundred and ten freshman men in North College and South College. The rooms are furnished except for necessary bedding or linen. They are cared for by the students who occupy them. Upper class men usually obtain rooms in private dwellings located near the campus. In most cases these rent for from \$2.50 to \$4 per week, depending somewhat on the location, and whether or not they are single or double. Such rooms are usually furnished. Students desiring aid in obtaining off campus rooms should write to the Assistant to the Dean. The College does not secure these rooms for the student but does keep a desirable list for student aid.

Rooms for Women.—Dormitory accommodations are available for about one hundred and five women students in the Abigail Adams House. These rooms are furnished except for necessary bedding or linen and are cared for by the students occupying them.

STUDENT EMPLOYMENT.

The College affords opportunity for part-time employment for a limited number of needy students. The number of applicants usually far exceeds the number of positions open so that no guarantee can be made that a student will find employment through the College. A faculty employment committee of which the Secretary of the College is chairman renders every possible assistance to deserving students in search of employment. Besides such opportunities on the campus as waiters and kitchen helpers at the dining hall, janitors for buildings, assistants on the farm and in college laboratories, there are some opportunities in private homes and businesses in the town.

Prospective students should be cautioned not to depend too much upon their earning capacity in the first year. This year is the most difficult to finance for two reasons. This is the student's first experience with college work and the usual result is that more time is required for study and less is therefore available for work. In this year also, since it is the first, the student is less familiar with his surroundings and not so able to locate work. Upper class men usually have most of the available jobs before the freshmen get acclimated. Students who are planning to enter college for the first time are therefore advised that they should have at least \$450 available with which to meet the expenses of the first year. Some students stay out of school for a year after graduating from high school in order to work and save this amount.

SCHOLARSHIPS.

Scholarships are awarded only to needy students of high character, whose habits of life are economical and who have maintained an average of at least 70% in their college course during the preceding year. Scholarships may also be granted to applicants for admission to the College provided they are candidates for a degree, are in need of financial assistance and are able to meet the entrance requirements in full. Complete information relative to the student's need for financial aid must be presented before any application can be acted upon. Scholarships are paid in installments at the beginning of each term in the form of a credit on the student's bill for that term. A scholarship may be discontinued at the close of any term if the scholastic record of the recipient is unsatisfactory.

Blanks for applying for a scholarship may be obtained from the Dean of the College. Applicants from the three upper classes must file at the Dean's Office before the close of the college year an account of their income and expenses for that college year together with a statement of their resources for the coming

year. Prospective freshmen may file their applications at the time their entrance requirements are satisfied in full.

The following scholarships are available:

1. General scholarships:
 - a. Nineteen scholarships of \$60 each, known as the Porter L. Newton Scholarships.
 - b. One scholarship of \$60 known as the Mary Robinson Scholarship.
 - c. One scholarship of \$60 known as the Henry Gassett Scholarship.
 - d. One scholarship of \$60 known as the Whiting Street Scholarship.
2. Scholarships limited to students from Berkshire County:
 - a. At least ten scholarships of \$60 or more, known as the Frederick G. Crane Scholarships.
3. Scholarships limited to women students:
 - a. One scholarship of \$150, known as the Helen A. Whittier Memorial Scholarship.
 - b. One scholarship covering all college expenses of the freshman year, known as the Cotting Memorial Scholarship.
4. Scholarships limited to men students of Hampshire County:
 - a. Several scholarships known as the Wilbur H. H. Ward Scholarships.

LOANS.

Loans may be granted to needy students requiring some assistance in meeting the expenses of the college course. The student must present a properly endorsed note at the time a loan is made. Money thus loaned is at a low rate of interest until the student graduates or severs his connections with the college. Applications for a loan may be made at the Treasurer's Office.

These loans are made available through the income from the following funds:
Danforth Keyes Bangs Fund.—This is a gift of \$6,000 from Louisa A. Baker of Amherst, the income of which is to be used annually in aiding poor, industrious and deserving students to obtain an education in the Massachusetts State College.

Charles A. Gleason Fund.—This is a gift of \$5,000 from Charles A. Gleason of North Brookfield, Massachusetts, a trustee of the college from 1889 to his death, September 29, 1925.

Massachusetts Agricultural Club Fund.—The Massachusetts Agricultural Club has given \$500 to be used as a loan fund at the Massachusetts State College to help out deserving students there who intend to go into agricultural work.

4-H Club Loan Fund for Boys.—A loan fund of \$1,000.

4-H Club Loan Fund for Girls.—A loan fund of \$100.

Vincent Goldthwait Memorial Loan Fund.—A gift of \$5,000 from Dr. Joel E. Goldthwait in memory of his son.

SCHOLARSHIP HONORS AND AWARDS.

Honors Groups.—At the beginning of each term a list is posted of those students who during the previous term made a general average of 80 per cent or better. Three groups are recognized: those between 90 and 100; those between 85 and 90; and those between 80 and 85. Sophomores, Juniors and Seniors in the first two groups are allowed considerable freedom in the matter of class attendance.

General Honors Course.—High ranking Seniors who have maintained an average of 80 per cent throughout the college course are given the privilege of enrolling for a general honors course given during the spring term. Some outstanding instructor on the staff of the College or some other college is chosen to teach this. Since he has a group of selected senior students he is allowed the greatest freedom in the matter of course content and method of presentation.

Departmental Honors.—A student who has shown outstanding promise within some department and has maintained a general scholastic average of 80 per cent or better is permitted to apply for the privilege of registering for departmental honors. If his application is accepted by his department and the Honors Committee, he is allowed to pursue a course of independent study within

the department of his choice throughout his senior year. This may include intensive reading, investigation or laboratory work in connection with some problem that he chooses for his consideration. The objective is to create on the part of the student initiative, the power of independent investigation and to develop in him the spirit of research. Although the student is responsible for his undertaking he is encouraged to consult with his department in regard to his work should the need arise. At the close of his study the student presents a thesis covering his investigation. In addition he may be required to appear for an oral or written examination. If by the excellence of his work he satisfies all the requirements of his department and the Honors Committee his name will appear on the commencement program as receiving honors in the field of his specialization.

Phi Kappa Phi Elections.—Those members of the senior class whose scholarship average has been 85 or above are eligible for election to the Honorary Scholarship Society of Phi Kappa Phi. Not more than 15 per cent of the class can be elected, however.

SCHOLASTIC PRIZES.

Phi Kappa Phi Award for Scholarship.—Massachusetts Chapter of the Phi Kappa Phi Honorary Scholarship Society offers an award of \$100 for outstanding work in scholarship. This is given to some member of the Senior class at the opening of college in the fall. The award is based on the record of the first three years.

The Grinnell Prizes.—Given by the Hon. William Claffin of Boston, in honor of George B. Grinnell, Esq., of New York, for excellence in theoretical and practical agriculture. The contest is open to those senior students whose records on the registrar's books show an average standing of 80 or above for the technical work taken in the Divisions of Agriculture and Horticulture during the junior and senior years. There are three prizes of \$25, \$15, and \$10.

The Burnham Prizes.—These were made possible through the generosity of Mr. T. O. H. P. Burnham of Boston. Prizes of \$15 and \$10 are awarded to those students delivering the best and second best declamations in the Burnham contest. The preliminary contests are open under certain restrictions to freshmen and sophomores.

The Flint Prizes.—The Flint Oratorical Contest was established in 1881 by a gift of the late Charles S. Flint, a former trustee of the college. After his death the prizes were continued by college appropriation. Prizes of \$30 and \$15 are awarded as first and second prizes to those two students delivering the best orations in this contest.

The Hills Botanical Prize.—This is given through the generosity of Henry F. Hills of Amherst, for the first and second best herbaria. Competition is open to members of the senior, junior and sophomore classes. First prize \$20, second prize \$15.

The Betty Steinbugler Prize in English.—This prize of \$10 was endowed by John L. Steinbugler, New York City, in honor of his daughter Elizabeth Steinbugler Robertson, a graduate of this College in the Class of 1929. It is awarded annually to a woman in the junior or senior class who has written the best long paper on a subject of literary investigation in a course in English during the year.

ATHLETIC AND ACADEMICS PRIZES.

The Allan Leon Pond Memorial Medal.—This medal is awarded for general excellence in football in memory of Allan Leon Pond of the class of 1920, who died February 26, 1920. He was a congenial companion, a devoted lover of Alma Mater, a battle-scarred, though youthful, veteran of the Great War, a fine all-round athlete and a true amateur. He would rather win than lose, but he would rather play fair than win. He has been characterized as a typical student of this College.

The Southern Alumni Baseball Cup.—This cup is awarded to that member of the baseball team who contributes most to the success and reputation of the team, both in respect to skill and spirit.

The Thomas E. Minkstein Memorial Award.—This award is made by the

Class of 1931 in memory of their classmate who died July 16, 1930, while he was captain-elect of football. The award is given to one of the outstanding men in the Junior Class who has nearly as possible attained those standards of athletics, scholarship and leadership set by him whose memory this award honors.

The George Henry Richards Memorial Cup.—This cup is awarded annually to the member of the basketball team who shows the greatest improvement in leadership, sportsmanship, and individual and team play during the season. It is in memory of George Henry Richards of the Class of 1921 who died suddenly while a student at the College.

Academics Conspicuous Service Trophy.—This trophy is awarded to that student who during the past 12 months has made the most important, single contribution to the Academic Activities.

Academics Managers' Prize.—Fifty dollars in gold awarded annually to that Academics manager who fulfills his duties most efficiently.

STUDENT ACTIVITIES AND ORGANIZATIONS.

No small part of the value received from four years of college is the training that one acquires through participation in student activities. Student organizations offer excellent opportunities for leadership in a wide variety of fields.

STUDENT GOVERNMENT.

The Senate.—This is a student governing council. It is composed of representatives elected from the Junior and Senior classes. Besides acting as general director of undergraduate conduct it represents the interests of the students and the student body before the Faculty.

Adelphia.—This is a senior honorary society. The members are usually chosen from those who have been prominent in college activities. The society attempts in a quiet, unassuming way to mold student life on the campus.

The Honor Council.—The Honor System prevails at this college. The foreword of the Honor System reads as follows: "We, the students of the Massachusetts State College, believe that the goal of education is character. The man of character deals fairly with himself, and with others, and would rather suffer failure than stoop to fraud. The Honor System stands for this attitude in all relations of the students with the Faculty. In expression of our belief we pledge ourselves to the support of the constitution of the Honor System." Matters pertaining to the Honor System are in direct charge of the Student Honor Council, consisting of members elected from the four classes.

The Women's Student Council.—All appropriate matters pertaining to the conduct of women students are under the control of this council. It is composed of members selected from the senior, junior, and sophomore classes by all the women students.

ACADEMIC ACTIVITIES.

The College Musical Clubs include an orchestra, and a mixed chorus. These make various appearances during the year, both in Amherst and on tour.

The Dramatic Club, the Roister Doisters, presents annually a revue and two plays, one in connection with the Junior Promenade, and the other at Commencement. There is a Debating Society which conducts both class and inter-collegiate debates. All academic activities are supervised by the Academic Activities Board composed of Alumni, Faculty, and students.

"The Massachusetts Collegian" is a weekly newspaper, published by the undergraduates of the college.

"The Index" is the college yearbook published by the members of the Junior class.

COLLEGE FRATERNITIES.

There are several national and local fraternities represented on the campus. Rushing rules and general matters dealing with fraternity life are in charge of the Inter-fraternity Conference. This conference awards scholarships, a baseball cup, and a relay plaque to the winners of the Inter-fraternity Contests.

INTER-COLLEGIATE ATHLETICS.

The College is represented in inter-collegiate athletics by teams in all the leading sports, including football, baseball, track, hockey, and basketball. Gen-

eral policies governing athletics are in charge of the Athletic Board, composed of Alumni, Faculty, and students.

PROFESSIONAL CLUBS.

There are several professional clubs established in connection with the major work of the college. Included among these is an Animal Husbandry Club, Landscape Art Club, Pomology Club, Agricultural Economics Club, and Floricultural Club.

RELIGIOUS ORGANIZATIONS.

The Young Men's Christian Association and the Young Women's Christian Association are active both on the campus and off. In addition there is a Catholic Club, and a Jewish Menorah Society. The Cosmopolitan Club has as its object the cultivation of peace and the establishment of strong international friendship.

THE SOCIAL UNION.

The Social Union was established in 1907. All students become members of the Union by paying a small fee. In the fall and winter months the Union gives a series of entertainments.

STANDARDS OF DEPORTMENT.

The customary high standard of college men and women in honor, manliness, self-respect and consideration for the rights of others constitutes the standards of student deportment.

The privileges of the college may be withdrawn from any student at any time, if such action is deemed advisable.

It should be understood that the college, acting through its president or any administrative officer designated by him, distinctly reserves the right, not only to suspend or dismiss students, but also to name conditions under which students may remain in the institution. For example, if a student is not doing creditable work he may not only be disciplined but he may also be required to meet certain prescribed conditions in respect to his studies, even though under the foregoing rules his status as a student be not affected. The same provision applies equally to the matter of absences ("cuts"). According to the rules a student is allowed a certain percentage of absences from class and other exercises. This permission, which implies a privilege and not a right, may be withdrawn at any time for any cause.

Similarly, also, it applies to participation in student activities. Though this will ordinarily be governed by the rules as already laid down, yet if, in the judgment of the college authorities, a student is neglecting his work on account of these activities, the privilege of participating in them may be withdrawn for such time as is considered necessary. Moreover, it may be withdrawn as a punishment for misconduct. Prospective students or their parents may, upon application, obtain a copy of the faculty rules governing student relations to the college.

FRESHMAN REGISTRATION.

All members of the incoming freshman class are required to be in residence on the campus for the period September 19 to September 24, 1932, inclusive. This period is known as Freshman week. During this week will be given the several psychological examinations and tests required of freshmen. In addition physical examinations will be given to the men students. Such matters as pertain to schedule and section assignments will be taken care of at the same time. Lectures on student activities, college customs, and college curriculum will be given also. The object of this week is to introduce the new student into the college, so that only the minimum amount of time will be lost when the actual studies begin.

Admission to Collegiate Courses.

A. APPLICATION FOR ADMISSION.

Correspondence concerning admission should be addressed to the Dean's office.

Every applicant for admission to the college must be at least sixteen years old, and must present to the Dean proper testimonials of character, which, whenever possible, should come from the principal of the school at which the applicant has prepared for college. All applications for admission should be received at the Dean's Office on or before June first of the year in which the candidate expects to enroll. Blanks for such application may be obtained by addressing the Dean of the college. All entrance credentials must be in the hands of the Dean before the applicant can matriculate.

B. MODES OF ADMISSION.

Students are admitted to the freshman class either upon certificate or upon examination. No *diploma* from a secondary school will be accepted.

CERTIFICATES.—The Massachusetts State College is affiliated with the New England College Entrance Certificate Board. Therefore certificates of admission will be accepted from schools approved by the Board. Certificates of admission will also be accepted from any Massachusetts school listed as class "A" by the State Department of Education, but not included in the approved list of the New England College Entrance Certificate Board. Principals of schools in New England who desire the certificate privilege should address the secretary of the Board, Professor Frank W. Nicolson, Wesleyan University, Middletown, Conn. Certificates from schools outside of New England may be received if those schools are on the approved list of the leading colleges of the section in which the school in question is located.

The credentials of the Board of Regents of the State of New York are accepted as satisfying the entrance requirements of this college when offered subject for subject, provided the grades are satisfactory.

Certificates in order to be accepted must present in the prescribed and restrictive elective groups at least three of the necessary fourteen and one-half units. It is to be understood, however, that responsibility for certification in either elementary French, elementary German, English 1 or English 2, Latin A, Greek A or Algebra, must be assumed by one school, if the candidate has received his preparation in any one subject named above in more than one school. Subjects lacking on certificate must be made up at the time of the examinations for admission. Conditions to the amount of two units will be allowed.

Blank forms for certification—sent to principals or school superintendents only—may be obtained on application to the Dean of the college.

SPECIAL CERTIFICATE ARRANGEMENT FOR STUDENTS FROM AGRICULTURAL SCHOOLS.—Superior graduates of Vocational Schools of Agriculture in Massachusetts and Vocational Agricultural Departments in Massachusetts High Schools may be accepted for the Degree of Vocational Agriculture provided:—

(a) they are unqualifiedly recommended by the Vocational Division of the Department of Education as *bona fide* Vocational Graduates with superior rank; and

(b) that they can present at least 14½ units of certified entrance, approved as to quality and quantity by the State Department of Vocational Education.

C. EXAMINATIONS.

Entrance examinations for admission to the Massachusetts State College will be held at the following centers:—

In June Amherst, Stockbridge Hall, room 114.
 Cambridge, Massachusetts Institute of
 Technology, Massachusetts Ave. entrance.

In September Amherst, Stockbridge Hall, room 114.

Please note that September examinations are held in Amherst only.

Schedule for Entrance Examinations June 16-18, 1932.

First Day.

- 8.30 A.M. Algebra.
10.30 A.M. Chemistry.
2.00 P.M. History (ancient, medieval and modern, English, United States and Civics).

Second Day.

- 8.30 A.M. English 1 and 2.
11.30 A.M. Botany and Biology.
2.00 P.M. Plane Geometry.
3.30 P.M. Physics.

Third Day.

- 8.30 A.M. French, German, Spanish, required and elective.
1.00 P.M. Latin, elementary, intermediate and advanced, and all one-half credit electives, except those already noted.

Schedule for Entrance Examinations September 14-17, 1932.

First Day.

- 2.15-5.00 P.M. Greek, elementary and intermediate.

Second Day.

- 8.30 A.M. Algebra.
10.30 A.M. Chemistry.
2.00 P.M. History (ancient, medieval and modern, English, United States and Civics).

Third Day.

- 8.30 A.M. English 1 and 2.
11.30 A.M. Botany and Biology.
2.00 P.M. Plane Geometry.
3.30 P.M. Physics.

Fourth Day.

- 8.30 A.M. French, German, Spanish, required and elective.
1.00 P.M. Latin, elementary, intermediate and advanced, and all one-half credit electives, except those already noted.

D. REQUIREMENTS FOR ADMISSION.

The requirements for admission are based on the completion of a four-year high school course or its equivalent and are stated in terms of units. A unit is the equivalent for at least four recitations a week for a school year.

Fourteen and one-half units must be offered for admission in accordance with the entrance requirements outlined below. In some instances students are allowed to enter conditioned in not more than two units.

Entrance Requirements.

1. *Prescribed.*—The following units are required:—

Algebra	1½
Plane Geometry	1
English 1 (Grammar and Composition)	2
English 2 (Literature)	1
History	1
A foreign language	2

8½

2. *Restricted electives.*—From two to six units selected from the following subjects:—

Mathematics and Science.

Solid Geometry	$\frac{1}{2}$
Trigonometry	$\frac{1}{2}$
Biology	1
Botany	$\frac{1}{2}$ or 1
Chemistry	1
Geology	$\frac{1}{2}$
Physical Geography	$\frac{1}{2}$
Physics	1
Physiology	$\frac{1}{2}$
Zoölogy	$\frac{1}{2}$

History.

Ancient	1
English	1
Medieval and Modern	1
United States and Civics	1

Foreign Language.

Elementary French	2
Elementary German	2
Elementary Spanish	2
Elementary Latin	2
Elementary Greek	2
Intermediate French	1
Intermediate German	1
Intermediate Spanish	1
Intermediate Latin	1
Intermediate Greek	1
Advanced French	1
Advanced German	1
Advanced Spanish	1
Advanced Latin	1

3. *Free margin electives*—not over four units. In case fourteen and one-half units cannot be presented in the prescribed and restricted elective groups, units not to exceed four may be offered as free margin electives. Credit in the free margin will be allowed for any substantial courses (agriculture, general science and fourth year English included) not listed under the prescribed and restricted elective groups for which credit of not less than one-half unit earned in one year is given toward a secondary school diploma. Since no entrance examinations are given in these subjects they may be offered only on certificate.

E. OTHER INFORMATION ABOUT ENTRANCE.

1. If elementary algebra and plane geometry are counted as three units the total requirement for admission will be fifteen.

2. Both the credits under the prescribed and restricted elective groups must be presented either by certificate from an approved school or by examination or by a combination of both. Credit by certificate will not be accepted unless at least three units are offered.

3. Candidates are allowed to spread their entrance examinations over the three consecutive periods just previous to their entrance into college. A period means June to September of the same year.

4. Examinations for the removal of entrance conditions will be held during the first week of the second term.

5. All entrance conditions must be satisfied before a student is permitted to enter upon the work of the sophomore year.

6. The privileges of the college may be withdrawn from any student at any time if such action is deemed advisable, regardless of whether entrance was gained by certificate or examination.

7. The passing grade for an entrance examination is 60 per cent.

F. ADMISSION TO ADVANCED STANDING.

A student desiring to transfer to this college from another of recognized standing must present the following credentials:—

1. A letter of honorable dismissal from the institution with which he has been connected.

2. A statement or certificate of his entrance record.

3. A statement from the proper officer showing a complete record of his work while in attendance.

4. A marked catalogue showing the courses pursued.

5. A statement from the proper officer, giving the total number of credits required for graduation by the institution from which the applicant is transferring, and, of this total, the number that the applicant has satisfactorily completed at the time of the transfer.

The above credentials must be sent directly from the Registrar's office of the college from which the student is transferring. They should be addressed to the Dean of the Massachusetts State College. Applications will be judged wholly on their merits. The college may prescribe additional tests before accepting applicants or determining the standing to be granted them.

At least one year's work in residence is required of any student desiring to be recommended for the Bachelor of Science degree.

G. STATEMENT OF PREPARATION REQUIRED FOR ADMISSION.

AGRICULTURE.

Entrance credit in agriculture is granted on the following basis:—

I. The Massachusetts State College accepts a maximum of four units in agriculture (except as described on page 33) from any secondary or county agricultural high school offering work in that subject, provided evidence of such work having been done is submitted on a principal's statement, as is indicated in the "free margin" group.

II. In high schools organizing agricultural club work under the supervision and rules of the junior extension service of the college, one credit is granted for each full year of work performed under the following plan:—

Work of the Winter Term.—(a) The study of textbooks such as are suitable for secondary school instruction in agriculture.

(b) Course of study: A general outline of suggested topics for study.

(c) Visits by a representative of the Massachusetts State College for observation, counsel and advice in regard to kind and amount of work being done in agriculture.

(d) Formation of an agricultural club with officers from among its own members, meeting once a month under local supervision of someone authorized to act for the school authorities.

Work of the Spring Term.—Same in general form as winter term.

Work of Summer Term.—An approved project conforming to the rules of some one or more of the agricultural clubs of the junior extension service of the Massachusetts State College.

Work of the Fall Term.—(a) An exhibit of work.

(b) Reports and story of achievement submitted to the junior extension service of the college.

BIOLOGY.

The entrance examination in biology will cover the work outlined by the College Entrance Examination Board. This work should extend through one full year and include both laboratory and textbook study. The requirements are met by Hunter's *Civic Biology* and similar texts.

BOTANY.

For one unit of credit in botany, the work outlined in the statement of requirements issued by the College Entrance Examination Board, or its equivalent, will be accepted. This work should occupy one school year and include laboratory and supplementary textbook study. For one-half unit of credit, work that covers the same ground but occupies half the time required for a full unit of credit will be accepted. These requirements are met by such texts as Stevens' *Introduction to Botany* and Bergen & Davis' *Principles of Botany*. A notebook, containing neat, accurate drawings and descriptive records forms part of the requirement for either the half-unit or the one-unit credit. The careful preparation of an herbarium is recommended to all prospective students of this college, although the herbarium is not required.

CHEMISTRY.

The entrance examination in chemistry will cover the work outlined by the College Entrance Examination Board as preparatory for college entrance. In general, this consists of a year of high school chemistry from any standard textbook, with laboratory work on the properties of the common elements and their simpler compounds. No particular work is prescribed. The keeping of a notebook is required.

Students who do not take chemistry in the preparatory school begin the subject in college.

MATHEMATICS.

(a) *Required*.—Algebra: The four fundamental operations for rational algebraic expressions; factoring, determination of highest common factor and lowest common multiple by factoring; fractions, including complex fractions; ratio and proportion; linear equations, both numerical and literal, containing one or more unknown quantities; problems depending on linear equations; radicals, including the extraction of the square root of polynomials and numbers; exponents, including the fractional and negative; quadratic equations, both numerical and literal; simple cases of equations with one or more unknown quantities that can be solved by the methods of linear or quadratic equations; problems depending upon quadratic equations; the binomial theorem for positive integral exponents, the formulas for the n th term and the sum of the terms of arithmetic and geometric progressions, with applications.

Plane Geometry: The usual theorems and constructions of good textbooks, including the general properties of plane rectilinear figures; the circle and the measurement of angles; similar polygons; areas; regular polygons and the measurement of the circle; the solution of numerous original exercises, including loci problems; applications to the mensuration of lines and plane surfaces.

(b) *Elective*.—Solid Geometry: The usual theorems and constructions of good textbooks, including the relations of planes and lines in space; the properties and measurement of prisms, pyramids, cylinders and cones; the sphere and spherical triangle; the solution of numerous original exercises, including loci problems; applications to the mensuration of surfaces and solids.

Plane Trigonometry: A knowledge of the definitions and relations of trigonometric functions and of circular measurements and angles; proofs of the principal formulas and the application of these formulas to the transformation of the trigonometric functions; solution of trigonometric equations, the theory and use of logarithms, and the solution of right and oblique triangles.

PHYSICS.

To satisfy the entrance requirement in physics, the equivalent of at least one unit of work is required. This work must consist of both classroom work and laboratory practice. The work covered in the classroom should be equal to that outlined in Hall & Bergen's *Textbook of Physics* or Millikan & Gale; the laboratory work should represent at least thirty-five experiments involving careful measurements, with accurate recording of each in laboratory notebook.

PHYSIOLOGY.

Hough & Sedgwick's *The Human Mechanism*; Martin's *The Human Body*; Briefer Course.

ZOOLOGY, PHYSICAL GEOGRAPHY, GEOLOGY.

The following suggestions are made concerning preparation for admission in the subjects named above:—

For physiography, Davis' *Elementary Physical Geography*; Gilbert & Brigham's *Introduction to Physical Geography*. For zoölogy, textbooks entitled *Animals* or *Animal Studies*, by Jordan, Kellogg and Heath; Linville & Kelley's *A Textbook in General Zoölogy*. For geology, A. P. Brigham's *A Textbook of Geology* or Tar's *Elementary Geology*.

Examination in these subjects will be general in recognition of the different methods of conducting courses; but students will be examined on the basis of the most thorough secondary school courses.

HISTORY.

The required unit must be offered in either ancient history, medieval and modern history, English history, or United States history and civics. Either one, two or three elective units in any of the historical subjects here named may be offered, provided that no unit be offered in the same subject in which the required unit has been offered.

Preparation in history will be satisfactory if made in accordance with the recommendations of the committee of seven of the American Historical Association, as outlined by the College Entrance Examination Board. The examination will require comparisons and the use of judgment by the candidate rather than the mere use of memory, and it will presuppose the use of good textbooks, collateral reading and practice in written work. Geographical knowledge may be tested by requiring the location of places and movements on outline maps.

To indicate in a general way the character of the textbook work expected, the texts of the following authors are suggested: Botsford, Morey or Myers, in ancient history (to 814 A.D.); Adams, West or Myers, in medieval history; Montgomery, Larned or Cheyney, in English history; Fiske, together with MacLaughlin or Montgomery, in United States history and civics.

ENGLISH.

The study of English in school has two objectives of equal importance: first, the ability to use the English language, in both speech and writing, clearly, correctly and effectively; and, second, the ability to read English literature with understanding and appreciation.

(1) *Grammar and Composition* (Two Units).—The first objective makes necessary a rigorous and reiterated instruction in grammar and composition, with special emphasis upon: spelling, sentence structure, punctuation and paragraph development. College freshmen are found deficient particularly in these fundamental phases of rhetoric.

(2) *Literature* (One Unit).—The second objective is sought by means of two lists of books, designated as *Books for Reading* and *Books for Study*, from which may be selected material for a progressive, four-year course in literature. The student should be trained to read aloud, to memorize significant passages, to associate the books with their historic background and to have well in hand both content and structure. He should be prepared for general examination on the former list and detailed examination on the latter. However accurate in subject matter, no paper will be considered satisfactory if seriously defective in punctuation, spelling or other essentials of good usage.

LISTS OF BOOKS FOR 1931-1932.

1. *Books for Reading.*

From each group two selections are to be made, except that for any book in Group V a book from any other may be substituted.

Group I.

Cooper: *The Last of the Mohicans*.

Dickens: *A Tale of Two Cities*.

George Eliot: *The Mill on the Floss*.

Scott: *Ivanhoe* or *Quentin Durward*.

Stevenson: *Treasure Island* or *Kidnapped*.

Hawthorne: *The House of the Seven Gables*.

Group II.

Shakespeare: *The Merchant of Venice*, *Julius Caesar*, *King Henry V*, *As You Like It*, *The Tempest*.

Group III.

Scott: *The Lady of the Lake*.

Coleridge: *The Ancient Mariner*; and Arnold: *Sohrab and Rustum*.

A collection of representative verse, narrative and lyric.

Tennyson: *Idylls of the King* (any four).

The Æneid or *The Odyssey* in a translation of recognized excellence, with the omission, if desired, of books I-V, XV and XVI of *The Odyssey*, or the *Iliad* with the omission, if desired, of books XI, XIII, XV and XXI.

Longfellow: *Tales of a Wayside Inn*.

Group IV.

The *Old Testament* (the chief narrative episodes in Genesis, Exodus, Joshua, Judges, Samuel, Kings and Daniel, together with the books of Ruth and Esther).

Irving: *The Sketch Book* (about 175 pages).

Addison and Steele: *The Sir Roger de Coverley Papers*.

Macaulay: *Lord Clive* or *History of England*, Chapter III.

Franklin: *Autobiography*.

Emerson: *Representative Men*.

Group V.

A modern novel.

A collection of short stories (about 150 pages).

A collection of scientific writings (about 150 pages).

A collection of prose writings on matters of current interest (about 150 pages).

A selection of modern plays (about 150 pages).

All selections from this group should be works of recognized excellence.

2. Books for Study.

One selection is to be made from each of groups I and II, and two from Group III.

Group I.

Shakespeare: *Macbeth*, *Hamlet*.

Group II.

Milton: *L'Allegro*, *Il Penseroso*, and either *Comus* or *Lycidas*.

Browning: *Cavalier Tunes*, *The Lost Leader*, *How They Brought the Good News from Ghent to Aix*, *Home Thoughts from Abroad*, *Home Thoughts from the Sea*, *Incident of the French Camp*, *Hervé Riel*, *Pheidippides*, *My Last Duchess*, *Up at a Villa—Down in the City*, *The Italian in England*, *The Patriot*, *The Pied Piper*, *De Gustibus*, *Instans Tyrannus*, *One Word More*.

Group III.

Burke: *Speech on Conciliation with America*.

Macaulay: *Life of Johnson*.

Lowell: *Democracy*.

Lincoln: *Speech at Cooper Union*, *his Farewell to the Citizens of Springfield*, *his brief addresses at Indianapolis, Albany and Trenton*, *the speeches in Independence Hall*, *the two Inaugural Addresses*, *the Gettysburg Speech*, and *his Last Public Address*, together with a brief memoir or estimate of Lincoln.

Carlyle: *Essay on Burns*, with a brief selection from Burns's poems.

FRENCH.

Elementary: The necessary preparation for this examination is stated in the description of the two-year course in elementary French recommended by the

Modern Language Association, contained in the definition of requirements of the College Entrance Examination Board.

Third and fourth year French (elective subjects for admission).—For a third unit in French as an elective subject for entrance, the work heretofore described by the College Entrance Examination Board as “intermediate” is expected. For a fourth unit, the work described as “advanced” is expected.

No examination for a third unit in French will be given unless the candidate has presented elementary French on certificate, or has written the examination in elementary French.

No examination for a fourth unit in French will be given unless the candidate has presented both elementary and intermediate French upon certificate, or has written the examination in both elementary and intermediate French.

GERMAN.

Elementary: The entrance requirements in German conform to those of the College Entrance Examination Board for elementary German (the standard two-year requirements).

Third and fourth year German (elective subjects for admission).—For a third unit in German as an elective subject for entrance, when required units have been offered in German, the work heretofore described by the College Entrance Examination Board as “intermediate” is expected. For a fourth unit, the work described as “advanced” is expected.

No examination for a third unit in German will be given unless the candidate has presented elementary German upon certificate, or has written the examination in elementary German.

No examination for a fourth unit in German will be given unless the candidate has presented both elementary and intermediate German upon certificate, or has written the examination for both elementary and intermediate German.

SPANISH.

Elementary: The necessary preparation for this examination is stated in the description of the two-year course in elementary Spanish recommended by the Modern Language Association, contained in the definition of requirements of the College Entrance Examination Board.

Third and fourth year Spanish (elective subjects for admission).—For a third unit in Spanish as an elective subject for entrance, the work heretofore described by the College Entrance Examination Board as “intermediate” is expected. For a fourth unit, the work described as “advanced” is expected.

No examination for a third unit in Spanish will be given unless the candidate has presented elementary Spanish on certificate, or has written the examination in elementary Spanish.

No examination for a fourth unit in Spanish will be given unless the candidate has presented both elementary and intermediate Spanish upon certificate, or has written the examination in both elementary and intermediate Spanish.

GREEK.

Elementary — Greek grammar and composition: Translation into Greek of short sentences illustrating common principles of syntax.

The examination in grammar and prose composition will be based on the first four books of Xenophon's *Anabasis*.

Intermediate: Homer's *Iliad*, Books I and II (omitting Book II, 494 to end), and the Homeric forms, constructions, idioms and prosody.

Prose composition, consisting of continuous prose based on Xenophon, and other Attic prose of similar difficulty.

Translation of passages of Homer at sight.

The examinations in Greek, elementary and intermediate, will be given in September only.

LATIN.

Elementary: Two credit units will be allowed if satisfactory proficiency is shown (including grammar) in (a) the translation of a passage or passages

taken from Caesar's *Gallic War*, covering at least four books, and (b) the translation of passages of Latin prose at sight.

Intermediate: Cicero (third oration *Against Catiline* and the orations *For Archias* and *For Marcellus*) and sight translation of prose.

Advanced: Virgil (*Æneid*, II, III and VI) and sight translation of poetry.

Collegiate Course of Instruction.

The course of study consists of four years of work planned to provide scientific foundation, cultural background, and professional training, and leads to the degree of Bachelor of Science (B.S.). The following five different major lines of specialization are provided: Agriculture; Horticulture; Home Economics; the Physical and Biological Sciences; and the Social Sciences.

FRESHMAN YEAR.

The work of the freshman year consists of definitely required subjects, most of which are identical for all students, in order to insure a uniform preparation in the more fundamental collegiate subjects. However, some differentiation is required in order to properly introduce each student to some major line of work in which he may find his professional interest, and major faculty contacts. This course is presented below in tabular form.

TABLE OF FRESHMAN SUBJECTS.

(Groups A and C of each term are required of all freshman men; Groups A and D of all freshmen women; and one of the options of Group B must be selected by each freshman to complete his year's program of study.)

Groups	Term I	Term II	Term III
A	Freshman Course 1 Chemistry 1 or 4 English 1 Mathematics 1† Physical Education 1	Freshman Course 2 Chemistry 2 or 5 English 2 Mathematics 2†	Freshman Course 3 Botany 3 English 3 Mathematics 3†
B	I Leading to specialization in AGRICULTURE Agronomy 1	Animal Husbandry 2	Dairy Industry 3
	II Leading to specialization in HOME ECONOMICS Home Economics 1	Home Economics 2	Home Economics 3
III	Leading to specialization in HORTICULTURE AND LANDSCAPE ARCHITECTURE Horticulture 1	Horticulture 2	Agronomy 3
IV	Leading to specialization in the PHYSICAL AND BIOLOGICAL SCIENCES French 1 or 4 or German 1 or 4	French 2 or 5 or German 2 or 5	French 3 or 6 or German 3 or 6
V	Leading to specialization in the SOCIAL SCIENCES French 1 or 4 or German 1 or 4	French 2 or 5 or German 2 or 5	French 3 or 6 or German 3 or 6
C	Military 1 Physical Education 2	Military 2	Military 3 Physical Education 3
D	Freshman Course 4 Physical Education 4	Physical Education 5	Freshman Course 6 Physical Education 6

† French or German is optional for Mathematics for students who intend to specialize in Home Economics.

SOPHOMORE YEAR.

The work of the sophomore year is also largely prescribed in order to insure as broad a cultural background as possible in preparation for the more specialized training of the last two years. Under the guidance of a major group advisory committee the student begins in this year certain optional choices of electives leading to the special courses of major work which he will later pursue. This course is presented below in tabular form.

TABLE OF SOPHOMORE SUBJECTS.

(Groups A and C are required of all sophomore men; Groups A and D of all sophomore women; and two of the electives of Group B must be selected by each sophomore, with the approval of his major group advisory committee.)

Groups	Term I	Term II	Term III
A	English 25 English 28 Economics 25 Physics 25 or Zoology 26	English 26 English 29 Agric. Economics 26 Botany 25	English 27 English 30 History 30 Physics 27 or Physiology 33
B	I AGRICULTURE group electives		
	Poultry Husbandry 25 Chemistry 29	Chemistry 30 Farm Management 26 Physics 26	Agri. Engineering 27 Botany 26
	II HOME ECONOMICS group electives		
	Home Economics 28 Drawing 30	Home Economics 32 Chemistry 30	Home Economics 40 Home Economics 46
	III HORTICULTURE AND LANDSCAPE ARCHITECTURE group electives		
	Olericulture 25 Chemistry 29 Drawing 25 Horticulture 25	Floriculture 25 Entomology 26 Drawing 26	Pomology 25 Botany 26 Drawing 27 Horticulture 27
	IV PHYSICAL AND BIOLOGICAL SCIENCE group electives		
	Chemistry 29 German 25 Mathematics 28 Physics 25 Zoology 26	Bacteriology 30 Chemistry 25 Entomology 26 German 26 Mathematics 29 Mathematics 26 Physics 26 Zoology 27	Botany 26 Chemistry 26 Entomology 28 German 27 Mathematics 30 Mathematics 27 Physics 27 Zoology 28
	V SOCIAL SCIENCE group electives		
	French 1, 25, or 28 German 1, 25, or 28 History 28 Sociology 27	French 2, 26, or 29 German 2, 26, or 29 History 25 History 29	French 3, 27, or 30 German 3, 27, or 30 Agric. Education 29 Horticulture 27
C	Military 25 Physical Education 25	Military 26	Military 27 Physical Education 26
D	Physical Education 27	Physical Education 28	Physical Education 29

JUNIOR AND SENIOR YEARS.

The work of the junior and senior years is, with certain restrictions, elective under the guidance of a special adviser, who is a member of the advisory committee of the major group which the student selects during his freshman year as his field for professional training. The aim of the last two years is to give to each student as high a degree of proficiency in some one branch of learning as is possible without sacrificing the breadth of knowledge and training which should characterize a well-rounded college course. In order to insure this result, each student is required to complete, during his last two years of study, certain requirements for specialization within his major group and certain minimum requirements in other groups:

- I. Agriculture: Departments of Agricultural Engineering; Agronomy; Animal Husbandry; Dairy Industry; Farm Management; Poultry Husbandry.
- II. Home Economics: Department of Home Economics.
- III. Horticulture: Departments of Floriculture; Forestry; Landscape Architecture; Horticultural Manufactures; Olericulture; Pomology.
- IV. Physical and Biological Sciences: Departments of Bacteriology and

Physiology; Botany; Chemistry; Entomology, Zoölogy, and Geology; Mathematics and Civil Engineering; Physics; Veterinary Science.

V. Social Sciences: Departments of Agricultural Economics; Agricultural Education; Economics, History, and Sociology; Languages and Literatures.

For purpose of fulfilling the extra group requirements specified below, Groups I to III inclusive are regarded as a unit, since their work is comparable in field and character.

SPECIFIC REQUIREMENTS.

RULE 1. Credits for Graduation.—The minimum number of credits for graduation shall be 108 junior-senior credit hours, in addition to the satisfactory completion of the required courses of the freshman year and of the required and elective groups of the sophomore year.

RULE 2. Credits Each Term.—Except upon special permission from the Scholarship Committee, no student shall enroll for more than 20 nor less than 16 credits each term of his junior and senior years.

RULE 3. Specialization.—At the close of his sophomore year each student shall designate some department within his major group in which he desires to specialize, and shall complete, during his junior and senior years, not less than 27 and not more than 54 credits in junior-senior courses offered in that department. In special cases, with the approval of the student's major adviser and the Dean, this requirement may be satisfied by the selection of at least the minimum number of credits from two or more departments of closely related work.

RULE 4. Requirements in Other Groups.—Each student shall complete, during his junior and senior years, not less than 9 credits in each of two groups other than his major group unit. That is, students pursuing a major in any one of Groups I to III, inclusive, must complete at least 9 credits each in Groups IV and V; students in Group IV must complete at least 9 credits each in Groups I to III, inclusive, and V; those in Group V, at least 9 credits in Groups I to III, inclusive, and IV.

RULE 5. Credit in Military Science and Tactics.—Not to exceed 18 Junior-Senior credits in Military Science may be included in the minimum requirements for graduation.

RULE 6. Advisers.—The work of each student will be under the general supervision of his major group advisory committee from the beginning of his sophomore year, and during his junior and senior years under the immediate supervision of a special adviser who shall be some member of that committee and shall represent the department in which the student is to specialize under the terms of Rule 3. The adviser has full authority to prescribe the student's work required by Rules 3 and 4, and may advise the student with reference to his elections under Rule 7.

RULE 7. Free Electives.—Subject to the limitations imposed by Rules 2, 3, 4, and 5, each student may elect during his junior and senior years any courses offered in the catalogue for which he has the necessary prerequisite training.

RULE 8. Registration.—No junior or senior shall register until his course of study is approved by his adviser.

(1) A card for recording the election of courses will be issued from the Schedule Room four weeks before the beginning of the final examination period.

(2) This card must be submitted by each student to his adviser, who will lay out the course for the succeeding term and countersign the card.

(3) This card, accompanied by one hour plan, must be returned to the Schedule Room two weeks before the beginning of the final examination period.

RULE 9. Changing of Major Group.—Application for change of major group can be made to the Dean in writing at any time; when approved by both major group advisory committees concerned and by the Dean and the Scholarship Committee, the change becomes operative at the beginning of the term following, provided that no change in the selection of a major group may be made by any student after registration day of his senior year.

Description of Courses.

[Heavy-faced Roman numerals indicate the term in which the course is given. Numbering of courses: 1 to 24, inclusive, freshmen; 25 to 49, inclusive, sophomores; 50 to 74, inclusive, juniors; 75 to 99, inclusive, seniors.]

SPECIAL COURSES FOR FRESHMEN.

1. **I. 2. II. 3. III. ORIENTATION COURSE.**—The course will acquaint the student with the modern view of the world and man. It will present some of the main human problems of the present, especially those associated with the major work of the College. Though the subject matter is informational it will be used at times to illustrate methodology in study and thinking. The course is organized as three terms of work given as follows:

1. **MAN IN NATURE.**—The main objective is to acquaint the student with his physical environment. This is accomplished by a brief discussion of topics such as the following: The earth in its relation to other astronomical bodies, its origin and growth; the physical forces operating on the earth; the nature and development of plant and animal life; the influence of all these on man. Wherever possible the subject matter is used to illustrate the methodology of study.

2. **MAN IN SOCIETY.**—The main objective is to acquaint the student with his original nature and social heritage. This is accomplished by brief discussions of instincts, habits and reflection; by a consideration of the individual with this nature in his relation to the family, the economic order, the political order, the school, church and to certain social values. A survey is also made of man's attempt to understand and control both his physical environment and himself in his own interest.

3. **THE METHOD OF SCIENCE.**—The main objective is to consider the nature of scientific thinking and then to use this as a method of attack in considering some of the vital problems man faces today. These problems suggest themselves as the natural outgrowth of man's increasing control over nature and himself. So far as is possible, they will be selected from the fields covered in the major work of the college.

2 class hours.

Credit, 2.

Assistant Professor LANPHEAR.

4. **I. COLLEGE ADJUSTMENTS.**—For freshman women. A study of the experiences of everyday life in college, to help students recognize various social problems and think in terms of their solution.

1 class hour.

Credit, 1.

Miss SKINNER.

6. **III. VOCATIONAL OPPORTUNITIES FOR WOMEN.**—For freshman women. An outline of the occupational progress of women, with special attention to the opportunities for women in those vocations for which the Massachusetts State College gives foundation preparation.

2 class hours.

Credit, 2.

Miss HAMLIN.

DIVISION OF AGRICULTURE.

Professor RICE.

Agricultural Engineering.

Professor GUNNESS, Assistant Professor MARKUSON, Assistant Professor TAGUE, Mr. PUSHEE, Mr. NEWLON.

The courses in agricultural engineering are planned to give a working knowledge of those phases of engineering which apply directly to the farm. It is expected that the student will acquire a clear understanding of modern farm practice as it relates to permanent improvements of the farm and the farmstead, and in the selection and use of farm equipment.

Elective Courses.

27. **III. MECHANICAL DRAWING AND BUILDING CONSTRUCTION.**—For sophomores; juniors and seniors may elect. The exercises include lettering, geometric construction, orthographic projection, isometric drawing, and the making of working drawings of simple farm equipment. This course is for the agricultural student who wishes to learn the use of drawing instruments, the reading of blue prints, and some of the general practices of drafting valuable to every agriculturist. Instruction is given in building construction in order to teach the use of carpentry tools, to teach the economical use of building materials, and to give the elements involved in the framing of small structures. Students who contemplate taking Agricultural Engineering 75 will find this course helpful.

3 2-hour laboratory periods, credit, 3.
Assistant Professor MARKUSON and Mr. PUSHEE.

50. **III. FARM EQUIPMENT.**—For juniors; seniors may elect. This course deals with the mechanical equipment of the farm, including care and repair of field implements. Practice is given in forge work, pipe fitting, soldering, and the use of machine tools. The purpose of this course is to acquaint the student with the place of up-to-date equipment on the farm and to give an appreciation of the factors involved in obtaining efficient use of this equipment.

1 class hour.
2 2-hour laboratory periods, credit, 3.
Assistant Professor TAGUE and Mr. NEWLON.

51. **I. RURAL SANITARY EQUIPMENT.**—For juniors; seniors may elect. This course deals with the problems of providing water for farms, and means for disposal of sewage. A careful study is made of the different types of water systems and their adaptability to various conditions. The septic tank and other means of sewage disposal are studied.

2 class hours.
1 2-hour laboratory period, credit, 3.
Assistant Professor MARKUSON.

53. **II. HOUSE PLANNING AND CONSTRUCTION.**—For juniors; seniors may elect. Plan designs of the small house will be made. The arrangement of interior equipment, especially in the kitchen, lighting, heating, water supply, and sewage disposal will be studied, together with a brief history of the house, materials, construction methods, equipment, and architectural styles. Consideration will be given to the economics of house building, including financing and to maintenance and overhead expense.

2 class hours.
2 2-hour laboratory periods, credit, 4.
Assistant Professor MARKUSON.

54. **II. HEAT AND POWER ENGINEERING.**—For juniors; seniors may elect. This course deals with the application of electricity to farm operations including wiring and electric motors. The course also covers pumping equipment and refrigeration equipment as used on New England farms.

2 class hours.
1 2-hour laboratory period, credit, 3.
Professor GUNNESS and Mr. NEWLON.

75. **I. FARM STRUCTURES.**—For seniors; juniors may elect. A study of the strength and durability of concrete, wood, stone, and clay products, and of the mechanical principles underlying their use in farm construction. The design of various farm buildings, such as the general purpose barn, dairy stable, hog house, sheep barn, milk house, etc. In the drafting room, details of construction will be worked out, a study of the mechanics of simple roof trusses will be made, and a complete design of some major farm building will be finished in all essential details. Blueprints of the finished design will be made.

1 class hour.
2 2-hour laboratory periods, credit, 3.
Assistant Professor MARKUSON.

78. **I. FARM MOTORS.**—For seniors; juniors may elect. This course deals with the gasoline engine as used for stationary work, automobiles, and

tractors. The theory of the internal combustion engine is taken up in order to emphasize the effect of design and operation on power and economy. The various types of carburetors, ignition, and lubrication systems are studied in detail. Instruction is given by means of lectures and textbooks, and by operating and repairing stationary engines, automobiles, and tractors. Special attention is given to overhauling and repairing.

3 2-hour laboratory periods, credit, 3.
Assistant Professor TAGUE and Mr. PUSHEE.

79. **III. DRAINAGE AND IRRIGATION ENGINEERING.**—For seniors; juniors may elect. The course covers the engineering phase of drainage and irrigation. The various systems are studied, and practice is given in the design of drainage and irrigation systems. Field work gives practice in surveying for drains, platting, locating drains, erecting batterboards, and laying tile. Practice is given in assembling equipment for spray irrigation, and the flow of water through nozzles is studied by means of laboratory tests.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Assistant Professor MARKUSON.

81. **III. DAIRY MECHANICS (1931-32).**—For juniors; seniors may elect. A study of dairy machinery, including steam boilers, engines, pumps, traps, refrigeration machinery, and heat-controlling devices. Practice is given in pipe fitting, packing valves, lacing belts, and similar repair jobs on the equipment used in dairy plants. Given in alternate years.

2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor TAGUE and Mr. NEWLON.

82. **I. RURAL ELECTRIFICATION.**—For seniors; juniors may elect. This course is planned primarily for students who are interested in the application of electricity to agriculture. It includes a study of the generation and distribution of electricity for light and power. Special emphasis is placed on the utilization of electricity on the farm and in rural communities.

2 class hours.

1 2-hour laboratory period, credit, 3.
The DEPARTMENT.

83. **I, II, and III. AGRICULTURAL ENGINEERING PROBLEMS.**—Open to seniors only. This course consists of individual problems chosen by the students under guidance of the department. The work is of an advanced nature, supplementing that of the regular agricultural engineering curriculum. Copy of project outline, indicating the number of credits, must be filed with the department and with the Dean at the opening of the term.

Credit, 3.
The DEPARTMENT.

Agronomy.

Professor BAUMONT, Assistant Professor CUBBON, Mr. THAYER.

The courses in agronomy are designed to give instruction concerning the basic knowledge of the soil and its management, fertilizers and their use, and the principal products of the field. An important objective of our undergraduate teaching is to give supporting training to groups specializing in other departments. For undergraduates desiring to specialize in agronomy adequate courses are offered, but for those expecting to go into advanced educational or research work our graduate training is recommended as preferable.

Elective Courses.

1. **I. FIELD CROPS.**—For freshmen. The course deals with the most important field crops of the world, but emphasizes those of special importance in New England.

2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor CUBBON.

3. **III. SOIL MANAGEMENT.**—For freshmen. An introductory course covering the properties and management of soils.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor CUBBON.

50. **I. CROP PRODUCTION FOR DAIRY AND STOCK FARMS.**—For juniors; seniors may elect. An intensive study of methods and problems of production of those field crops of greatest importance in the successful management of New England dairy stock farms. Special attention will be given to the conditions found on the Massachusetts general farm, on which dairying and stock-raising are important.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor CUBBON.

Prerequisite, Agronomy 3.

51. **III. ADVANCED FIELD CROPS (1932-33).**—For juniors and seniors. This course is designed primarily for those specializing in field crops. Studies begun in Course 50 will be continued and extended to crops of importance beyond the range of New England. Theory and practice of crop improvement by plant breeding will be given attention. Given in alternate years.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor CUBBON.

Prerequisite, Agronomy 50.

52. **II. SOIL FERTILITY.**—For juniors; seniors may elect. A study of factors affecting soil fertility, with special attention to organic matter, soil reaction, and the use of fertilizers. Attempt will be made to meet the special needs of groups of students from other majors.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor CUBBON.

53. **III. SOIL UTILIZATION.**—For juniors; seniors may elect. Primarily for those not having had other courses in soils. Deals with the nature and properties of soil types, their adaptation to crops, and special problems arising in the management of extreme soil types.

3 class hours.

Credit, 3.

Assistant Professor CUBBON.

77. **II. FERTILIZERS.**—For seniors; juniors may elect. A study of the source, properties, and behavior of commercial fertilizers and soil amendments. Attention will be given to such questions as home-mixed versus commercial fertilizers, the use of concentrated materials, and the economical purchase of fertilizers.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Professor BEAUMONT.

78. **I. CROP IMPROVEMENT (1931-32).**—For seniors; juniors may elect. Theory and practice of plant breeding and selection as applied to field crops. Given in alternate years.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor CUBBON.

80. **III. AGRONOMIC LITERATURE.**—For juniors and seniors in agronomy. Practice will be given the student in looking up original sources of agronomic knowledge and in preparing reports and abstracts.

3 class hours.

Credit, 3.

Professor BEAUMONT.

Animal Husbandry.

Professor RICE, Assistant Professor GLATFELTER, Assistant Professor PARSONS, Mr. FOLEY.

The courses in animal husbandry are offered to meet the needs of students interested in the various phases of live-stock farming and market-milk production; agricultural college teaching; high and secondary school teaching; federal,

state, railroad, bank, or breed extension services; federal or state experiment station service; meat-packing industry; commercial feed industry.

Elective Courses.

2. **II. TYPES AND MARKET CLASSES OF LIVESTOCK.**—For freshmen. This first course in animal husbandry is designed to acquaint the student with the market demands in all the various classes of livestock, and to ascertain the types and breeds best fitted to fill this demand. This work also serves as a survey course showing the magnitude of the livestock industry and the indispensability of livestock and their manifold products in a modern, civilized country. 2 class hours.

1 2-hour laboratory period, credit, 3.

Professor RICE.

50. **I. THE NUTRITION OF FARM ANIMALS.**—For juniors; seniors may elect. This course is planned to acquaint the student with the chemistry and physiology of digestion, assimilation, and work, meat, wool or milk production. The feed requirements of the various classes of livestock in terms of energy, proteins, minerals and vitamins are ascertained, as well as the rôle of the various roughages, concentrates and by-product feeds in meeting these requirements.

3 class hours.

Credit, 3.

Assistant Professor GLATFELTER.

51. **II. THE FEEDING OF FARM ANIMALS.**—For juniors; seniors may elect. A study of feeding practices as related to all classes of farm animals. This course is the complement of Course 50 and is for the purpose of demonstrating the applications of the science of nutrition to practical feeding problems. Considerable work will be given in the formulating of rations.

3 class hours.

Credit, 3.

Assistant Professor PARSONS.

52. **II. MEAT AND MEAT PRODUCTS.**—For juniors; seniors may elect. This course deals with the manufacture of animals into their various commercial products and the distribution of these products to the consumer. Practice is given in the slaughtering of beef cattle, hogs, and sheep; judging of carcasses; cutting and curing of meats. The practical work is augmented by studies in the grading of fat stock, in packing-house methods, in the magnitude and trends of the meat industry, and in the opportunities of local New England marketing.

1 class hour.

1 4-hour laboratory period, credit, 3.

Mr. FOLEY.

53. **III. THE BREEDING AND IMPROVEMENT OF FARM ANIMALS.**—For juniors; seniors may elect. This course is planned to acquaint the student with the facts of reproductive physiology, with the facts and theories of modern genetics and to show how such knowledge may be utilized for the creation of more beautiful and more efficient animal types.

3 class hours.

Credit, 3.

Professor RICE.

54. **III. ADVANCED LIVE-STOCK JUDGING.**—For juniors; seniors may elect. This course serves as a laboratory supplement to Animal Husbandry 53. It has three aims: (a) to train the student to see and evaluate differences in farm animals; (b) to begin the training of men who will act as judges of live stock at fairs; (c) to develop judging teams in both fat stock and dairy cattle to represent the college in the intercollegiate live-stock judging contest at the leading expositions. Trips will be taken each Saturday during the term to the leading herds and flocks in Massachusetts and nearby states. Approximate expense of travel is twenty-five dollars.

1 2-hour laboratory period on Friday, and all day Saturday, credit, 3.

Mr. FOLEY.

75. **I. HORSE AND SWINE PRODUCTION.**—For seniors. The purpose of this course is to seek the solution of the various economic, nutritional, genetic and managerial problems concerned in the production of horses and swine. The

student is called upon to utilize the scientific principles of feeding, breeding, etc., which he has mastered in his first three years of college work in solving the manifold problems concerned in successful livestock production.

2 class hours.

1 2-hour laboratory period, credit, 3.

Mr. FOLEY.

76. **II. BEEF AND SHEEP PRODUCTION.**—For seniors. The same as Course 75 above but applied to Beef Cattle and Sheep Production.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor GLATFELTER.

77. **III. DAIRY CATTLE AND MILK PRODUCTION.**—For seniors. The same as Course 75 above but applied to Dairy Cattle and Milk Production.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor RICE.

80. **III. ADVANCED BREED STUDIES.**—This course is open only to those specializing in animal husbandry. Some one or more breeds of livestock will be thoroughly studied especially from the standpoint of the selection of a foundation herd or flock. An opportunity will also be offered for a careful study of the management of the College farm and livestock.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professors RICE and PARSONS.

81. **II.** 82. **III. ANIMAL HUSBANDRY SEMINAR.**—Required of students majoring in animal husbandry. Students will prepare original papers and talks on various pertinent topics. Round table discussions of animal husbandry investigational work and practices will be conducted.

1 class hour.

Credit, 1.

The DEPARTMENT.

Dairy Industry.

Professor FRANDSEN, Assistant Professor MACK, Mr. LINDQUIST.

The courses in dairy industry are offered to meet the needs of students interested in the handling of market milk, and the science and art of butter making, ice-cream making, and cheese making; agricultural college teaching, and experiment station work; high and secondary school teaching; extension work; research and investigational work.

Elective Courses.

3. **III. GENERAL DAIRYING.**—For freshmen. A general course, prerequisite to all other dairying courses except 51 and 53, and for those who wish to take only one course in dairying to get a general knowledge of the subject. The work covers briefly: a study of milk, its secretion, composition, and various tests applied thereto; methods of handling milk and cream; the use of separators; elements of butter making, cheese making, and ice-cream making.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor FRANDSEN and Mr. LINDQUIST.

51. **II. JUDGING DAIRY PRODUCTS.**—For juniors; seniors may elect. A study of standards and grades of dairy products, with practice in judging milk and ice cream, as well as butter and cheese. The student learns to recognize quality in dairy products, to detect specific defects, and to know their causes and the means of their prevention.

1 2-hour laboratory period, credit, 1.

Assistant Professor MACK.

52. **III. MARKET MILK.**—For juniors; seniors may elect. A study of the various phases of the market milk industry: sanitary production, transportation, marketing, handling in the city plant, delivery systems, milk and its relation to

Part II.

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the public health, inspection, milk laws, food value, and advertising. Some milk plants will be visited. The approximate expense of travel is five dollars.
3 class hours.

2 2-hour laboratory periods, credit, 5.

Mr. LINDQUIST.

Prerequisite, Dairy 3.

53. **III. ADVANCED JUDGING OF DAIRY PRODUCTS.**—For juniors; seniors may elect. The judging of milk, ice cream, butter, and cheese, using standard commercial methods and official score cards. A team is chosen from this class to represent the college in dairy products judging contests at the Eastern States Exposition and the National Dairy Show.

2 2-hour laboratory periods, credit, 2.

The DEPARTMENT.

Prerequisite, Dairy 51.

75. **I. MILK PRODUCTS (1931-32).**—For juniors and seniors. The manufacture of milk products other than butter and ice cream, including cheddar cheese, soft and fancy cheese, condensed and powdered milk, casein, commercial buttermilk, etc. Laboratory exercise largely in cheese making and commercial buttermilk manufacture. Given in alternate years.

1 class hour.

1 4-hour laboratory period, credit, 3.

Mr. LINDQUIST.

Prerequisite, Dairy 3, previously or in conjunction.

76. **I. ADVANCED TESTING (1932-33).**—For juniors and seniors. The work covers moisture and fat testing for all dairy products; the casein test; salt test for butter; acid tests; work with the Monjonner apparatus; and many other applied chemical tests used in dairy manufactures work. Given in alternate years.

2 4-hour laboratory periods, credit, 4.

Assistant Professor MACK.

Prerequisite, Dairy 3, previously or in conjunction.

77. **II. BUTTER MAKING (1932-33).**—For juniors and seniors. A study of separators and cream separation; handling milk and cream for butter making; preparation of starters, and ripening cream; churning, markets and their requirements; marketing, scoring, and judging butter; creamery management; care of butter-making equipment; problems. Given in alternate years.

2 class hours.

2 3-hour laboratory periods, credit, 5.

The DEPARTMENT.

Prerequisite, Dairying 3.

78. **III. ICE-CREAM MAKING (1931-32).**—For juniors and seniors. A study of the principles and practice of ice-cream making. The laboratory instruction will cover commercial practices. Some ice-cream plants will be visited. The approximate expense of travel is five dollars. Given in alternate years.

2 class hours.

2 3-hour laboratory periods, credit, 5.

Assistant Professor MACK.

Prerequisite, Dairying 3.

79. **I. 80. II. 81. III. SEMINAR.**—For students majoring in dairy manufactures. This class consists of a study of the work accomplished by various experiment stations, also a review of foreign literature. Students will prepare papers on various dairy subjects. Frequent addresses will be made to the class by visiting dairy authorities.

1 class hour.

Credit, 1.

Professor FRANDSEN.

Farm Management.

Professor FOORD, Assistant Professor BARRETT.

The purpose of the courses in this department is to train men to manage farms and other agricultural enterprises, as well as to prepare them for research and teaching in similar lines.

Elective Courses.

26. **II. INTRODUCTION TO FARM MANAGEMENT.**—For sophomores; juniors and seniors may elect. The course will consist of a study of types of farming, comparative advantage, economic specialization and the factors of farm production. Specific problems illustrating the above points will be given as laboratory exercises.

2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor BARRETT.

75. **I. FARM ORGANIZATION.**—For seniors. A general course in the organization and business management of the farm. A study of regions and types of farming; the farmer as a business proprietor; funds for investment in the farm business; use of labor, land, equipment, and materials; selection and combination of factors of farm production. Discussions of the size of the farm business, farm balance, farm layout and arrangement.

2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor BARRETT.

Prerequisite, the required sophomore work in agriculture or horticulture, or the permission of the instructor.

76. **II. FARM OPERATION AND COST ACCOUNTING.**—For seniors. A continuation of Course 75. A study of the means of production, and the selection and combination of farm enterprises. Discussions of the nature of farming costs, the farmer's profits, and the farmer as a technical expert. The consideration of farm records and accounts as a basis for efficient operation.

2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor BARRETT.

Prerequisite, Farm Management 75.

77. **III. ADVANCED FARM ORGANIZATION.**—For seniors. A further and more specific study of the principles and practices outlined in Courses 75 and 76, with special reference to their application to farms in Massachusetts. Field trips are required. The approximate expense for travel is five dollars.

1 class hour.

1 4-hour laboratory period, credit, 3.
Assistant Professor BARRETT.

Prerequisites, Farm Management 75 and 76.

78. **II. 79. III. SEMINAR.**—For seniors majoring in general agriculture; others by arrangement.

1 class hour.

Credit, 1.
Professor FOORD.

81. **III. TYPES OF FARMING IN THE UNITED STATES.**—For seniors. A study of the agricultural regions of the United States and the different types and methods of farming carried on in each. The economic reasons for the establishment and maintenance of each type will be considered.

2 class hours.

1 2-hour laboratory period, credit, 3.
Professor FOORD.

Poultry Husbandry.

Professor GRAHAM, Professor SANCTUARY, Assistant Professor BANTA, Mr. VONDELL.

The department aims to give instruction in the science, art, and practices of poultry keeping not only to the men majoring in this department, but also to students majoring in other departments and desiring supporting courses in poultry husbandry. Our major courses prepare men for the successful operation of commercial poultry farms and marketing projects either as owners or managers; for graduate work, teaching, extension and investigational work.

Elective Courses.

25. **I. POULTRY JUDGING.**—For sophomores. A study of the origin and evolution of our standard breeds and varieties of domestic fowl; judging pro-

duction quality, using trapnested birds; judging exhibition quality by score card and comparison. One or more poultry farms, an egg-laying contest, and a poultry show will be visited. Poultry judging teams competing in the inter-collegiate contest at Madison Square Garden each January are trained in this course.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Assistant Professor BANTA.

50. **I. POULTRY HOUSING AND SANITATION.**—For juniors; seniors may elect. A consideration of the biological needs of poultry from the standpoint of housing, and the economic principles governing designing and construction of poultry houses and equipment for poultry farm buildings. The course also embodies a study of the principles of poultry sanitation, including external parasites and the insecticidal agents for their control.

3 class hours.

Credit, 3.
Professor SANCTUARY.

51. **II. POULTRY FEEDS AND FEEDING.**—For juniors; seniors may elect. A study of the common feeds and the scientific principles underlying the field of nutrition. Recent experimental work and current feeding problems will receive special consideration. For observational practice and accumulation of original data, the management of a pen of birds will be required for a period of a few weeks.

3 class hours.

2 2-hour laboratory periods, credit, 5.
Assistant Professor BANTA.

52. **III. INCUBATION AND BROODING.**—For juniors; seniors may elect. A study of the fundamental principles underlying incubation and brooding practices. The science of physics and general biology is applied to the study of incubation and brooding processes. Students become thoroughly acquainted with modern incubation and brooding equipment through detailed study and operation of typical incubators and brooders. Present-day problems are considered and some are investigated as a part of the class work.

2 class hours.

2 2-hour laboratory periods, credit, 4.
Professor SANCTUARY.

76. **I. MARKET POULTRY AND POULTRY PRODUCTS.**—For seniors. A study of market classes of poultry and eggs; preparation of poultry products for market; requirements of different markets; methods of marketing, involving a study of distribution, finances, and business organizations; cold storage and transportation; advertising, prices, and food values. Laboratory exercises in candling, packing, killing, dressing, and similar operations to make the above named factors more concrete. Students are required to fatten pens of chickens by different methods and rations, keeping accurate data of the gains in weight and quality, also the costs of feed and labor, and resultant profit or loss. Competitive judging of the exhibits in the Annual Market Poultry Show, staged by the members of this class, is a feature of the course. When possible, a short trip to Springfield is arranged to study cold storage plants and the handling of poultry products in the local market.

2 class hours.

1 2-hour laboratory period, credit, 3.
Mr. VONDELL.

77. **II. POULTRY BREEDING.**—For seniors. Methods of selection and improvement of poultry are developed through the study of the principles of heredity. Most of the course centers around the progeny test and pedigree method of breeding. Students taking this course participate in the college plant selection in pedigree work. Three breeds of poultry, each pedigreed for from seven to twenty years, furnish practice materials.

4 class hours.

1 2-hour laboratory period, credit, 5.
Professor SANCTUARY.

78. **III. POULTRY FARM ORGANIZATION.**—For seniors. This course embodies the application of economic and business principles to poultry farming. The place and importance of the various branches of well-organized poultry

farms and their relation to each other receive special consideration; also the study of surveys and production costs. A trip covering two or three days will be made to representative successful poultry farms. The expense per student is approximately fifteen dollars. This trip is required of each student taking the course for credit.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor SANCTUARY.

Prerequisite, Poultry 77.

79. **III. FARM POULTRY.** — For seniors; juniors may elect. For those students who desire a general knowledge of poultry husbandry but who cannot devote more than one term to the subject; it is not intended for students specializing in poultry, and such students are admitted only by special permission. Emphasis is placed on the farm flock and its economic management. Utility classification, housing, culling, feeding, hatching, rearing, production, marketing, and disease control receive special consideration.

3 class hours.

2 2-hour laboratory periods, credit, 5.

Assistant Professor BANTA.

80. **I, II, and III. POULTRY PROBLEMS.** — Open to seniors only. This course consists of individual problems chosen by the students under guidance of the department. The work is of an advanced nature, supplementing that of the regular poultry curriculum. Copy of project outline, indicating the number of credits, must be filed with the department and with the Dean at the opening of the term.

Credit, 1 to 4.

The DEPARTMENT.

DIVISION OF HOME ECONOMICS.

Professor SKINNER.

Home Economics.

Professor SKINNER, Assistant Professor KNOWLTON, Assistant Professor BRIGGS.

The home economics courses offered are planned to meet the needs of (1) those students who are interested in education for homemaking as an integral part of the general education of women; (2) those who wish to enter a graduate school leading to professional work; (3) those who are interested in preparing for home economics extension service, both junior and adult; (4) those who are interested in professional or vocational work in which an understanding of home economics is fundamental. Other departments offer courses planned especially for students in home economics, as follows: House Planning and Construction in the Department of Agricultural Engineering; General Design in the Department of Landscape Gardening; and Food Preservation in the Department of Horticultural Manufactures.

Elective Courses.

1. **I. INTRODUCTION TO HOME ECONOMICS.** — For freshmen. A brief study of the share which women have had in social progress, in order that each student may recognize the importance of her relationships to her own family group, and may become conscious of problems in the modern home which need to be considered.

3 class hours.

Credit, 3.

Miss SKINNER.

2. **II. CLOTHING APPRECIATION AND DESIGN.** — For freshmen. Line, design, and color in relation to the college student's wardrobe will be studied. The care of clothing will also be included.

2 class hours.

1 2-hour laboratory period, credit, 3.

Miss BRIGGS.

3. **III. FOODS.**—For freshmen. A study of foods in their scientific and economic aspects, with the preparation of simple meals.
1 class hour. 2 3-hour laboratory periods, credit, 3.
Miss KNOWLTON.

28. **I. CLOTHING SELECTION AND CONSTRUCTION.**—For sophomores. This course includes a study of the selection and purchase of suitable materials, of the use of commercial patterns, and of practical methods of making simple garments. The estimated cost of materials used is from five to ten dollars.
1 class hour. 2 2-hour laboratory periods, credit, 3.
Miss BRIGGS.

32. **II. APPLIED DESIGN.**—For sophomores. Applications of the principles of design are worked out in specific problems, using various media. Much opportunity is allowed for individual expression. The estimated cost of materials used is five dollars.
3 2-hour laboratory periods, credit, 3.
Miss BRIGGS.

Prerequisite, Drawing 30.

40. **III. FOODS.**—For sophomores. A further study of food values and the day's meals as a whole. Especial emphasis on economy in expenditure of money, time, and labor.
1 class hour. 2 3-hour laboratory periods, credit, 3.
Miss KNOWLTON.

Prerequisite, Home Economics 3, or permission of instructor.

46. **III. CLOTHING AND TEXTILES.**—For sophomores. A study of the production, manufacture, identification, and use of the common textile fibers. Class trips to textile mills will be included, at an estimated expense of two dollars. Laboratory work in the construction of garments is used as a basis for a study of ready-made garments. The estimated cost of materials used is from five to ten dollars.
1 class hour. 2 2-hour laboratory periods, credit, 3.
Miss BRIGGS.

Prerequisites, Home Economics 2 and 32; Drawing 30; Home Economics 28 is also prerequisite for those majoring in home economics.

51. **II. NUTRITION.**—For juniors. A study of food needs throughout infancy, childhood, adolescence, adult life, and old age, considering the energy value of foods and the nutritive properties of foodstuffs. Typical dietaries are planned for each period, with special regard to nutritive requirements.
2 class hours. 2 3-hour laboratory periods, credit, 5.
Miss KNOWLTON.

Prerequisites, Home Economics 3 and 40; Chemistry 30.

58. **III. GENERAL COURSE IN FOODS AND NUTRITION.**—For juniors and seniors, not home economics majors, both men and women. A survey of the principles of food preparation, meal planning, and food values, with emphasis on the relation of good nutrition to health.
2 class hours. 1 3-hour laboratory period, credit, 3.
Miss KNOWLTON.

60. **II. HOUSEHOLD EQUIPMENT (1932-33).**—For juniors and seniors. A study of the selection, operation, care and efficient arrangement of equipment, with an analysis of the time and energy required in various processes. Given in alternate years.
2 class hours. 1 2-hour laboratory period, credit, 3.

THE DEPARTMENTS OF AGRICULTURAL ENGINEERING AND HOME ECONOMICS.

61. **III. HOME FURNISHING.**—For juniors. A study of the fundamental principles which underlie the successful planning and furnishing of a satisfying

home. Many applications of these principles are worked out in practical problems. Class trips will be taken at an estimated expense of two dollars.

3 class hours.

2 2-hour laboratory periods, credit, 5.

Miss BRIGGS.

Prerequisites, Drawing 30; Agricultural Engineering 53.

76. **I. HOME MANAGEMENT.**—For seniors. A study of personal and family standards of living, the economic relations of the household, and the use of time, energy, and money as a means to influence the home situation.

3 class hours.

Credit, 3.

Miss SKINNER.

77. **I, II, and III. HOME MANAGEMENT PRACTICE.**—For seniors. Students will live in the Home Management House for an interval varying in length from one-half term to one term, and study concrete problems in home management.

Credit, 3 or 5.

Miss KNOWLTON.

Prerequisites, Home Economics 3, 40, 51, 61, 76, and the approval of the department.

79. **II. CHILD CARE AND TRAINING (1931-32).**—For seniors. This is a study of the physical and mental growth and development of the child, the rational care of children at various ages, the treatment in behavior problems, and the influence of environment in shaping personality. Field trips at an estimated cost of two dollars. Given in alternate years.

3 class hours.

Credit, 3.

80. **III. PROBLEMS OF THE FAMILY.**—For seniors. This course consists of a study of the problems of family life in relation to the modern social organization. Its aim will be to develop an intelligent social consciousness and a sense of individual responsibility in family relationships.

3 class hours.

Credit, 3.

Miss SKINNER.

81. **I. METHODS OF TEACHING HOME ECONOMICS.**—For seniors, by arrangement with the head of the division. This course will discuss educational objectives as applied to the teaching of home economics in the junior and senior high schools, the psychological basis for teaching; evaluation of instructional material, selection and organization of subject matter; methods of teaching, and space and equipment.

2 class hours.

1 2-hour laboratory period, credit, 3.

The DEPARTMENT.

Prerequisite, Agricultural Education 56.

82. **II. PROBLEMS IN ELEMENTARY NUTRITION.**—For seniors. This course is intended to show how the home economics graduate fits into the health program of the school, either as a teacher or as a volunteer worker. Recommended only to those pursuing a major in home economics.

2 class hours.

1 2-hour laboratory period, credit, 3.

The DEPARTMENT.

83. **III. FIELD PROBLEMS UNDER SUPERVISION.**—For seniors. This course is intended to be a more intensive application of home economics to special community problems and to serve as a beginning of simple research work. Recommended only to those pursuing a major in home economics. Required trips at an estimated cost of five dollars.

2 class hours.

1 2-hour laboratory period, credit, 3.

The DEPARTMENT.

85. **II. CLOTHING ECONOMICS.**—For seniors. This course includes a study of clothing budgets for college students and business women, and a critical analysis of sources of clothing information. Some special investigation is carried on

by each student. Advanced work in garment construction is continued. The estimated cost of materials used is from seven to twelve dollars.

2 class hours.

1 3-hour laboratory period, credit, 3.

Miss BRIGGS.

Prerequisite, Home Economics 46.

DIVISION OF HORTICULTURE.

Professor WAUGH.

Floriculture.

Professor THAYER, Assistant Professor HUBBARD.

The courses in floriculture are intended to present a general knowledge of all phases of greenhouse design, construction, heating, and management, the culture of florists' crops (under glass and outdoors), floral decoration and arrangement, and the marketing of plants and flowers. The department aims to train students so that they may take up various phases of commercial floriculture, positions in nursery establishments, and the management of conservatories on private estates, in parks and cemeteries.

Elective Courses.

25. **II. GARDEN MATERIALS.**—For sophomores. A study of the annuals, biennials, herbaceous perennials, bulbs, bedding plants, and roses that are valuable for use in floricultural or landscape gardening work. Methods of propagation, culture and uses of the various plants are considered; identification of material. Lectures, assigned readings, and reports.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professors THAYER and HUBBARD.

50. **I. GREENHOUSE MANAGEMENT.**—For juniors; seniors may elect. Designed to familiarize students with the methods followed in the management of greenhouses and greenhouse crops, and the principles underlying the same; history and development of the floricultural industry; preparation of soils; fertilizers; potting; watering; ventilation; control of insects and diseases; methods of plant propagation; forcing of plants. At some time during the term the members of the class will be required to take a one-day trip to visit large commercial establishments. The approximate expense of the trip is five dollars. Lectures, assigned readings, reports, and laboratory practice.

2 class hours.

2 2-hour laboratory periods, credit, 4.

Professor THAYER.

Prerequisites, Horticulture 2, 25, and 27.

51. **II. GREENHOUSE MANAGEMENT.**—For juniors; seniors may elect. Continuation of Course 50. Several field trips, to study floricultural establishments in the vicinity, will be made during the laboratory periods. The approximate expense of the trips is three dollars.

2 class hours.

1 4-hour laboratory period, credit, 4.

Professor THAYER.

Prerequisite, Floriculture 50.

52. **III. FLORAL ARRANGEMENT.**—For juniors; seniors may elect. A study of the principles underlying the arrangement and use of cut flowers and plants; funeral designs, basket and vase arrangement, table decorations, home, church, and all interior decorations; a study of color as applied to such work. Lectures, assigned readings, and reports. This course is limited to ten students.

2 class hours.

2 2-hour laboratory periods, credit, 4.

Professor THAYER.

53. **I. GREENHOUSE CONSTRUCTION AND HEATING.**—For juniors; seniors may elect. The location, types, arrangement, construction, cost, equipment, heating, and ventilating of greenhouse structures; the drawing of plans and study of specifications for commercial houses and conservatory ranges. Such

practical work as glazing and the construction of concrete benches and cold frames is included as facilities allow. Lectures, assigned readings, and problems.
3 class hours. 1 2-hour laboratory period, credit, 4.
Professor THAYER.

58. **III. AMATEUR FLORICULTURE.**—This course is intended primarily for major students in the Division of Home Economics, and other women students. Three phases of floriculture will be considered briefly, the arrangement and use of cut flowers for various purposes in the home, house plants and their culture, and the small home garden.

2 class hours. 1 2-hour laboratory period, credit, 3.
Professor THAYER.

75. **I. 76. II. COMMERCIAL FLORICULTURE.**—For seniors. A detailed study of the cultural methods of the important commercial cut-flower crops and potted plants. Visits will be made to commercial establishments during the courses. The lectures are supplemented with textbooks and assigned readings.

2 class hours. 1 2-hour laboratory period, credit, 3.
Assistant Professor HUBBARD.

Prerequisite, Floriculture 51.

77. **III. COMMERCIAL FLORICULTURE.**—For seniors. The marketing of flowers and plants, including the management of wholesale markets and retail flower stores; a study of systems of record keeping, cost analysis, inventory methods, and other phases of this important part of the floricultural industry.

2 class hours. 1 2-hour laboratory period, credit, 3.
Assistant Professor HUBBARD.

Prerequisite, Floriculture 76.

79. **II. CONSERVATORY PLANTS (1932-33).**—Alternates with Course 80. For juniors and seniors. A study of the foliage and flowering plants used in conservatory work; methods of propagation; assigned readings and reports.

2 class hours. 1 2-hour laboratory period, credit, 3.
Professor THAYER.

80. **II. PROBLEMS IN FLORICULTURE (1931-32).**—Alternates with Course 79. For juniors and seniors majoring in floriculture. Advanced study of subjects pertaining to some phase of floriculture. All students are assigned specific problems and pursue study in these problems by reading and research. The results of this study must be presented in the form of a thesis. Discussions are conducted weekly.

1 class hour. 2 to 4 laboratory hours, not to exceed 3 credits.
Professor THAYER.

81. **III. SEMINAR.**—For seniors in floriculture. Presentation and discussion of research work in floriculture and other related fields, reports on assignments by individual members of the class, and the preparation of a thesis dealing with an assigned subject. Seminars are conducted weekly.

1 class hour. 2 to 4 laboratory hours, not to exceed 3 credits.
Professor THAYER.

Forestry.

Professor HOLDSWORTH.

The courses in forestry are designed to offer instruction suitable for students who desire some knowledge of the methods employed in the improvement and management of woodlands of moderate area. They are further intended to be explanatory of the field of forestry for those who plan to become students in graduate schools of forestry.

Elective Courses.

55. **I. THE MANAGEMENT AND USE OF WOODLANDS.**—For juniors and seniors. Method of determining the volume and value of the forest growing stock; the principle of sustained yield; forest improvement and maintenance.

The field work is conducted on the Mount Toby demonstration forest and includes the making of a forest estimate with map and accompanying data for a small area of representative woodland. The class periods are devoted principally to a study of the economic bases underlying forest use and management in New England and elsewhere.

1 class hour.

1 4-hour laboratory period, credit, 3.
Professor HOLDSWORTH.

56. **II. THE ELEMENTS OF FOREST PRODUCTION.**—For juniors and seniors. The nature of a forest; factors influencing and controlling the growth and development of forest trees and stands; the economic forest trees and woods with especial reference to New England.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Professor HOLDSWORTH.

57. **III. THE PRINCIPLES OF SILVICULTURE.**—For juniors and seniors. Methods of forest reproduction through silvicultural practice; intermediate cuttings; choice of species; supplementary plantings; forest sanitation and its relation to silviculture. The field work is conducted principally at the Mount Toby demonstration forest with visits to certain accessible forests now under scientific management.

1 class hour.

1 4-hour laboratory period, credit, 3.
Professor HOLDSWORTH.

58. **III. FOREST ECONOMICS AND POLICY.**—For juniors and seniors. The growth and development of forestry in the United States from an historical and economic viewpoint; Federal, State and private forestry; the development of a National Forest policy.

3 class hours.

Credit, 3.
Professor HOLDSWORTH.

Horticultural Manufactures.

Professor CHENOWETH, Mr. RICE.

The courses in Horticultural Manufactures have been planned to give the student (1) training in food preservation sufficient to meet the needs of a general education, and (2) training for technical work in the food industries including business, research and control.

Students who desire an elementary training as given in (1) above will restrict their work to the first year courses and they will not be required to offer as prerequisites other than the required general courses in the Sciences. Students who desire to make Horticultural Manufactures their major or specialized subject will be expected to take the full two years' work as outlined, and should consult with the department as to required courses in chemistry and bacteriology.

Elective Courses.

51. **I. FRUIT AND VEGETABLE PRODUCTS.**—For juniors; seniors may elect. This course together with Course 52 gives the student a general elementary knowledge of the science and practice of canning fruits and vegetables, and the manufacture of fruit and vegetable products. Principles and theories of the various methods of food preservation are the basis for classroom exercises. The laboratory work during this term deals with the preservation of the autumn fruits and vegetables.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Professor CHENOWETH.

52. **II. FRUIT AND VEGETABLE PRODUCTS.**—For juniors; seniors may elect. This is a continuation of Course 51. It deals with the preservation of small fruits and citrus fruits, dehydration and freezing, and the judging of canned and manufactured foods.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Professor CHENOWETH.

Prerequisite, Horticultural Manufactures 51.

53. **III. MISCELLANEOUS PRODUCTS.**—For juniors; seniors may elect. A continuation of Course 52. Emphasis is placed upon maple products; the canning of meats, poultry, and the early spring vegetables; the manufacture of pickles and pickled products, and the manufacture of fruit syrups.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Professor CHENOWETH.

Prerequisites, Horticultural Manufactures 51 and 52.

61. **I. COMMERCIAL PRACTICES.**—For seniors specializing in horticultural manufactures. A survey of commercial practices in canning and in manufacturing fruit and vegetable products. This will involve a study of equipment, factory arrangement and sanitation, the operation of types of commercial equipment in quantity production, the legitimate use of adulterants, applications of the food laws and the simple analysis of foods.

1 class hour.

2 2-hour laboratory periods, credit, 3.

The DEPARTMENT.

Prerequisite, Horticultural Manufactures 53.

62. **II. FOOD PRODUCTS.**—For seniors; juniors may elect. A general survey course. The source of raw materials, the commercial methods of manufacture, packing, distribution and uses of the more common food products are studied. Required of students who specialize in horticultural manufactures.

2 class hours.

Credit, 2.

Professor CHENOWETH.

63. **III. SPECIAL PROBLEMS.**—For seniors specializing in horticultural manufactures. A study of the more important contributions of research to food preservation, problems in need of solution, interpretation of research data and the formulation of research projects. Each student will be required to make a special study of some phase of food preservation.

1 conference period.

2 2-hour laboratory periods, credit, 3.

The DEPARTMENT.

Prerequisite, Horticultural Manufactures 61.

71. **I.** 72. **II.** 73. **III. SEMINAR.**—For seniors who specialize in horticultural manufactures. Seminar meetings are held each week.

1 class hour.

Credit, 1.

The DEPARTMENT.

78. **III. FOOD PRESERVATION.**—For seniors; graduate students may elect. Not open to students who have credit for Horticultural Manufactures 51-53 or 81 and 83. This is a general course in food preservation and intended only for those who desire a broad general knowledge of the subject because of its cultural or practical value.

2 class hours.

2 2-hour laboratory periods, credit, 4.

Mr. RICE.

81. **I. HOME FOOD PRESERVATION.**—For junior and senior women. This course together with Course 83 is planned to cover the general field of food preservation in the home. The canning of the autumn fruits and vegetables and the manufacture of them into their various products comprises the laboratory work for this term.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Professor CHENOWETH and Mr. RICE.

82. **II. SPECIAL PRODUCTS.**—For juniors and seniors. The materials offered in this course are as follows: the home manufacture of fruit preserves, candied and glacé fruits, fruit pastes, confections, candies and other fruit specialties. Approximately one-half the term is devoted to elementary work in candy making.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Professor CHENOWETH and Mr. RICE.

83. **III. HOME FOOD PRESERVATION.**—For junior and senior women. This is a continuation of Course 81. The laboratory work includes exercises in

Part II.

canning, poultry, and poultry products, meats, the spring and early summer vegetables, the manufacture of small fruit products, citrus fruit products and pickles.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Professor CHENOWETH and Mr. RICE.

Prerequisite, Horticultural Manufactures 81.

Horticulture.

Professor WAUGH, Professor BLUNDELL, Assistant Professor FRENCH.

The general subject of horticulture divides naturally into subjects of pomology, floriculture, forestry, landscape gardening, and vegetable gardening. A number of courses relate to more than one of these subjects, and are therefore grouped here under the general designation of horticulture.

Elective Courses.

1. **I. PLANT PROPAGATION.**—For freshmen. This course serves as an introduction to the field of horticulture, emphasizing the methods and underlying principles involved in the propagation of horticultural plants.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor FRENCH.

2. **II. HORTICULTURAL PRACTICES.**—For freshmen. This course is designed to demonstrate and explain the principles underlying the practical cultivation of economic plants. Consideration will be given to the culture of plants in their relation to soils, tillage, water, food supply, etc.

1 class hour.

2 2-hour laboratory periods, credit, 3.

25. **I. RELATIONSHIPS AND ASSOCIATIONS OF HORTICULTURAL PLANTS.**—For sophomores. A study of the outstanding characters utilized in acquiring a practical knowledge of the principal species and varieties of cultivated plants, together with a consideration of those principles which determine the natural associations of plants in so far as they bear on the best methods of plant culture.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Professor BLUNDELL.

27. **III. BREEDING OF HORTICULTURAL PLANTS.**—For sophomores and juniors. A study of the principles of inheritance as applied to plants, together with a consideration of the methods used and problems involved in the improvement of horticultural crops.

3 class hours.

Credit, 3.

Assistant Professor FRENCH.

50. **I. PLANT MATERIALS.**—For juniors; seniors may elect. The course aims to make the student familiar with the distinguishing characters of trees, shrubs, and woody vines used in ornamental plantings, together with the propagation and care of the same.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Professor BLUNDELL.

51. **III. PLANT MATERIALS.**—For juniors; seniors may elect. A continuation of Course 50, taking up the field uses of trees, shrubs, and woody climbers, their natural habitats, soils, and plant associations, with a view to supplying to the students in landscape gardening and floriculture a knowledge of the species and varieties used in ornamental planting. Frequent practicums and field excursions.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Professor BLUNDELL.

Prerequisite, Horticulture 50

55. **III. ADVANCED PLANT BREEDING.**—For juniors and seniors. An advanced study of experimental methods and biometry in plant breeding, Mendelian analysis, fluctuating variations, mutations, sterility, disease resistance, etc. Laboratory work in the experimental breeding of plants.
2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor FRENCH.

Prerequisite, Horticulture 27.

75. **III. HORTICULTURE REVIEW.**—Required of all seniors majoring in the Division of Horticulture. Designed to correlate the various branches of plant science and horticultural practice.

1 lecture hour, 1 conference period.

Credit, 2.
Professor WAUGH.

Landscape Architecture.

Professor WAUGH, Assistant Professor HARRISON, Assistant Professor ARMSTRONG, Mr. ROBERTSON.

The instruction in this department is aimed at two objectives: first, the contribution to general education; second, the preparation of men for the professional practice of landscape architecture. The former objective seems important from the fact that landscape architecture offers an excellent opportunity for the practical discussion of the principles underlying all the fine arts. In the professional courses students are prepared, as well as time permits, to begin work in landscape architecture which leads through field experience or post-graduate study to permanent establishment in that profession.

DRAWING.

Elective Courses.

25. **I. FREE-HAND DRAWING.**—For sophomores; juniors and seniors may elect. Lettering; free-hand perspective; sketching from models; laying flat and graded washes in water colors; water-color rendering of leaves, flowers, and trees.

3 2-hour laboratory periods, credit, 3.
Mr. ROBERTSON.

26. **II. MECHANICAL DRAWING.**—For sophomores; juniors and seniors may elect. Inking exercises; geometric problems; isometric projection; intersections; shades and shadows; parallel, angular, and oblique perspectives; perspective drawings of buildings. Students should have preparation in plane and solid geometry.

3 2-hour laboratory periods, credit, 3.
Mr. ROBERTSON.

27. **III. ELEMENTARY DESIGN.**—For sophomores; juniors and seniors may elect. Introduction to the principles of pure design, with various applications, especially in the field of landscape gardening.

6 laboratory periods, credit, 3.
Professor WAUGH.

Prerequisites, Drawing 25 and 26.

30. **I. ELEMENTARY DESIGN.**—For sophomore women. Elementary principles of design, with application to costume design, interior decoration, etc.

3 2-hour laboratory periods, credit, 3.
Mr. ROBERTSON.

LANDSCAPE ARCHITECTURE.

Elective Courses.

50. **I. MAPPING AND TOPOGRAPHY.**—For juniors. Reconnaissance and topographical surveys and mapping, with special reference to the methods used in landscape architecture. Must be followed by Course 51.

2 3-hour and 1 4-hour laboratory periods, credit, 5.
Assistant Professor HARRISON.

Prerequisites, Mathematics 26 and 27; Drawing 25, 26, and 27.

51. **II. ELEMENTS OF LANDSCAPE GARDENING.**—For juniors. Study of the engineering details of landscape gardening; grade design, road design, drainage, play areas, etc.

3 3-hour laboratory periods, credit, 4.
Assistant Professor HARRISON.

Prerequisite, Landscape Architecture 50.

52. **III. GENERAL DESIGN.**—For juniors. Detailed study of selected designs of leading landscape gardeners. Field notes; examination of completed works and those under construction; design of architectural details; written reports on individual problems.

2 3-hour and 1 4-hour laboratory periods, credit, 5.
Assistant Professor HARRISON.

Prerequisites, Landscape Architecture 50 and 51, and either plant materials (Horticulture 50) or advanced mathematics.

53. **II. GARDEN DESIGN.**—For juniors; seniors may elect. The elementary principles of structural design as applied to the simpler garden forms—the so-called “natural” and “formal” styles; other garden forms.

1 class hour. 6 laboratory periods, credit, 4.
Professor WAUGH.

Prerequisite, Landscape Architecture 50.

75. **I. THEORY OF LANDSCAPE ART.**—For seniors and graduates. The general theory and application of landscape study.

3 class hours. Credit, 3.
Professor WAUGH.

76. **III. CIVIC ART.**—For seniors. The principles and applications of modern civic art, including city planning, city improvement, and rural improvement, with special emphasis upon country planning.

3 3-hour laboratory periods, credit, 4.
Assistant Professor ARMSTRONG.

Prerequisites, Landscape Architecture 52 and 53.

78. **II. ARCHITECTURE (1932-33).**—Alternates with Course 79. For juniors and seniors. The history of architectural development, the different historic types, with special reference to the underlying principles of construction and their relation to landscape design. Illustrated lectures, field trips, the study of details, preparation of plates.

3 class hours. Credit, 3.
Assistant Professor HARRISON.

79. **II. CONSTRUCTION AND MAINTENANCE (1931-32).**—Alternates with Course 78. For juniors and seniors. Detailed instruction in staking out work; methods of construction and planting; organization, reporting, accounting, estimating, etc.

3 class hours. Credit, 3.
Assistant Professor HARRISON.

81. **I. RESIDENCE GROUNDS DESIGN.**—For seniors. Grading and planting plans; garden designs and planting.

3 3-hour laboratory periods, credit, 4.
Assistant Professor HARRISON.

Prerequisites, Landscape Architecture 52 and 53.

82. **II. ADVANCED DESIGN.**—For seniors. A series of problems in the design of estates, parks, and small property.

3 3-hour laboratory periods, credit, 4.
Assistant Professor ARMSTRONG.

Prerequisite, Landscape Architecture 81.

83. **III. PARK DESIGN.**—For seniors. Studies in modern park designs of various types.

3 3-hour laboratory periods, credit, 4.
Assistant Professor HARRISON.

Prerequisite, Landscape Architecture 82.

Olericulture.

Professor WAUGH, Assistant Professor SNYDER and Mr. TUTTLE.

The purpose of the courses is to train men (1) for all the commercial branches of vegetable and seed production, and (2) for the professional fields of research, extension work, and teaching.

Elective Courses.

25. **I. GENERAL OLERICULTURE.**—For sophomores. A general consideration of fundamentals in vegetable production which may be applied to the growing of vegetables as a cash crop with other types of agriculture, the growing of vegetables in the home garden, agricultural instruction in secondary schools, and professional agricultural work other than teaching.
2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor SNYDER.

51. **I. OLERICULTURE.**—For juniors; seniors may elect. A study of the principles underlying vegetable production; the vegetable plant, soil and its treatment, plant food, seed, and seedage.
2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor SNYDER.

52. **II. OLERICULTURE.**—For juniors; seniors may elect. A study of the principles underlying vegetable production; the vegetable plant and its responses to environmental conditions.
2 class hours.

1 2-hour laboratory period, credit, 3.
Mr. TUTTLE.

53. **III. OLERICULTURE.**—For juniors; seniors may elect. A study of the principles underlying vegetable production; methods of culture, storage, marketing, and pest control.
2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor SNYDER.

Prerequisite, Olericulture 25, 51, or 52.

75. **I. SYSTEMATIC OLERICULTURE.**—For seniors. A critical study of variety identification; nomenclature and classification; judging and exhibiting.
2 class hours.

2 2-hour laboratory periods, credit, 4.
Assistant Professor SNYDER.

76. **II. OLERICULTURE OF GREENHOUSE CROPS.**—For seniors. A study of the principles underlying the culture of vegetables under glass.
2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor SNYDER.

77. **III. COMMERCIAL OLERICULTURE.**—For seniors. A critical study of the fundamental problems in the commercial production of vegetables. Visits to the leading market and truck sections in the state are required. Twenty-five dollars will cover such trips.
2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor SNYDER.

Prerequisite, Olericulture 25, 51, or 52.

Pomology.

Professor SEARS, Professor VAN METER, Assistant Professor FRENCH, Mr. ROBERTS.

It is the object of the courses in pomology to give the student a thoroughly practical training, so that he may be able to perform or supervise all of the

different operations in connection with the growing and marketing of the various fruits. At the same time he is given a thorough grounding in the scientific principles on which the practical work is based, in order that he may better understand the various practices taught.

Elective Courses.

25. **III. SMALL FRUITS.**—For sophomores; juniors and seniors may elect. A study of the growing of small fruits, including raspberries, blackberries, strawberries, currants, blueberries, and grapes, dealing with such questions as varieties, selecting a site for the plantation, soils, fertilizers, pruning, harvesting, marketing, etc.

2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor FRENCH.

53. **I. GENERAL POMOLOGY.**—For juniors; seniors may elect. A study of the most approved practices in fruit production. Textbooks, lectures, and reference books; field and laboratory exercises.

2 class hours.

1 2-hour laboratory period, credit, 3.
Professor SEARS and Mr. ROBERTS.

56. **III. SPRAYING.**—For juniors; seniors may elect. (a) Spraying materials, their composition, manufacture, and preparation for use; the desirable and objectionable qualities of each material; formulas used, cost, tests of purity. (b) Spraying machinery, including all the principal types of pumps, nozzles, hose, and vehicles; their structure and care. (c) Orchard methods in the application of the various materials used, with the important considerations for spraying each fruit and for combating each orchard pest. This course is designed especially to familiarize the student with the practical details of actual spraying work in the orchard. Spray materials are prepared, spraying apparatus is examined and tested, old pumps are overhauled and repaired, and the actual spraying is done in the college orchards and small-fruit plantations.

1 class hour.

2 2-hour laboratory periods, credit, 3.

75. **I. SYSTEMATIC POMOLOGY (1932-33).**—For juniors and seniors. A study of the more important kinds and varieties of fruits grown in the United States, their relationships and nomenclature. Particular emphasis is placed upon the identification, classification and value of varieties including a study of the characters of the plant as well as the fruit. Given in alternate years.

1 class hour.

3 2-hour laboratory periods, credit, 4.
Assistant Professor FRENCH.

76. **II. SYSTEMATIC POMOLOGY (1932-33).**—For juniors and seniors. A continuation of Course 75. Given in alternate years.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Assistant Professor FRENCH.

Prerequisite, Pomology 75.

77. **I. COMMERCIAL POMOLOGY (1931-32).**—For juniors and seniors. The picking, handling, storing, and marketing of fruits, including a discussion of storage houses, fruit packages, and methods of grading and packing. Special emphasis is placed upon laboratory and field work, where the student is given actual practice in the picking and packing of most of the principal fruits. Given in alternate years.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Mr. ROBERTS.

80. **I.** 81. **II.** 82. **III. SEMINAR.**—For seniors majoring in pomology. Advanced study of problems relating to the business of fruit growing. Each student is assigned a major problem in lines of work in which he is particularly interested. He pursues his studies both by reading and research, and the materials obtained will be worked into theses, which are presented to the seminar.

for discussion. No lectures are given, but seminar meetings are held for one period each week.

1 class hour.

Credit, 1.

The DEPARTMENT.

83. **II. GEOGRAPHY AND ECONOMIC PROBLEMS OF THE FRUIT INDUSTRY (1931-32).**—For juniors and seniors. This course considers the leading American and foreign centers of fruit production as they affect our own fruit industry through competition here or abroad. Particular reference is made to the economic position of fruit growing in New England and to the major factors influencing the industry here. The distribution of production costs in New England is studied with relation to costs in other regions and to the details of orchard management. Given in alternate years.

3 class hours.

Credit, 3.

Professor VAN METER.

Prerequisite, Pomology 53.

84. **II. ADVANCED POMOLOGY.**—For seniors. A critical survey of the scientific principles underlying orchard practices, with especial attention to recent research work in fruit growing. Textbooks, lectures, assigned readings, and field exercises.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor SEARS and Mr. ROBERTS.

Prerequisite, Pomology 53.

85. **III. ADVANCED POMOLOGY.**—For seniors. As stated under Course 84.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor SEARS and Mr. ROBERTS.

Prerequisite, Pomology 84.

DIVISION OF PHYSICAL AND BIOLOGICAL SCIENCES.

Professor GORDON.

Bacteriology and Physiology.

Professor GAGE, Professor BRADLEY, Miss GARVEY.

The courses in bacteriology and physiology have been planned to furnish: (1) general training in these subjects for all college students, (2) training for those interested in agriculture, industries, and domestic science, (3) training for prospective students of human or veterinary medicine and public health, (4) training for teachers and laboratory workers in the biological sciences. The courses in bacteriology include introductory and general courses, and advanced work, most of which precedes the applied bacteriology of agriculture, the arts, industry, domestic science, and public health. The course in physiology includes considerations of modern ideas on this subject in relation to human welfare.

BACTERIOLOGY.

Elective Courses.

30. **II. INTRODUCTORY AND GENERAL BACTERIOLOGY.**—For sophomores, juniors, and seniors. Designed to make micro-organisms real and significant. An attempt is made to demonstrate their wide distribution and relationship to agriculture, arts, science, industries, and medicine. The course aims to provide an elementary basis for bacteriological study and interpretation and to furnish such material as will be valuable in understanding agriculture, domestic science, and public health problems.

2 3-hour laboratory periods, credit, 3.

Professor BRADLEY and Miss GARVEY.

51. **III. DIFFERENTIAL BACTERIOLOGY.**—For juniors; seniors may elect. Morphological, cultural, and physiological aspects of micro-organisms are considered. Types of bacteria, their classification and identification, and their func-

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tions are studied. This course is fundamental to all advanced and extended microbiological studies.

2 3-hour laboratory periods, credit, 3.
Professor BRADLEY and Miss GARVEY.

Prerequisite, Bacteriology 30.

60. **I. PUBLIC HEALTH.**—For juniors; seniors may elect. Considers the relation of the human body to its environment in the maintenance of health and the production of disease. This study is based upon human anatomy and physiology. The individual, as a member of society, governed by natural laws, is also of fundamental importance. Animal and human diseases of public health significance are reviewed, their control considered, and their social values discussed.
3 class hours.

Credit, 3.
Professor BRADLEY.

61. **II. PUBLIC HEALTH.**—For juniors; seniors may elect. Industrial hygiene, the laboratory in relation to public health, child and school hygiene, public health law and vital statistics will be considered.
3 class hours.

Credit, 3.
Professor GAGE.

Prerequisite, Bacteriology 60.

62. **III. PUBLIC HEALTH.**—For juniors; seniors may elect. Sanitation and its relation to agriculture and public health. The microbiological features of air, water, soil, sewage, refuse, and the control of municipal and rural sanitary projects will be considered.
3 class hours.

Credit, 3.
Professor BRADLEY.

Prerequisite, Bacteriology 61.

75. **I. ADVANCED BACTERIOLOGY (Serology).**—For seniors; juniors may elect. This course will include the study, preparation and standardization of biological products for use in differential bacteriology and diagnosis. The study of antigens, amboceptors, hemolysins, agglutinins, precipitins, complement-fixation bodies and isohemagglutinins will be considered. This course prepares for the study of advanced agricultural, domestic science, and public health problems.

10 laboratory hours, credit, 5.
Professor GAGE and Miss GARVEY.

Prerequisite, Bacteriology 51.

82. **I. SOIL BACTERIOLOGY.**—For seniors; juniors may elect. Such subjects as the number and development of micro-organisms in different soils; the factors which influence their growth; food, reaction, temperature, moisture, and aeration; the changes wrought upon inorganic and organic matter in the production of soil fertility, ammonification, nitrification, and denitrification; fixation of nitrogen symbiotically and non-symbiotically; methods of soil inoculation receive attention.

2 3-hour laboratory periods, credit, 3.
Professor BRADLEY and Miss GARVEY.

Prerequisite, Bacteriology 30.

81. **II. FOOD BACTERIOLOGY.**—For seniors; juniors may elect. A study of the principles of food preservation and food conservation by means of drying, canning, refrigerating, and addition of chemicals. Food fermentations, as illustrated by bread, vinegar, etc., are examined. Decomposition of foods, as may be seen in meat, oysters, fish, milk, etc., as well as diseased and poisonous foods, receive consideration. Contamination of food supplies by means of water, sewage, handling, exposure, diseased persons, etc., is of especial significance and is

demonstrated by laboratory exercises. Laboratory inspection of foods is now a subject of great import and is given attention.

2 3-hour laboratory periods, credit, 3.
Professor BRADLEY and Miss GARVEY.

Prerequisite, Bacteriology 30.

80. **III. DAIRY BACTERIOLOGY.**—For seniors; juniors may elect. Special emphasis is placed upon milk supplies. The microbial content of milk, its source, its significance, its control; microbial taints and changes in milk; groups or types of organisms found in milk; milk as a carrier of disease-producing organisms; the value of clarification, centrifugal separation, temperature, pasteurization; the abnormal fermentations of milk; bacteriological milk standards and their interpretation; ripening of milk and cream; the bacterial content of butter; a survey of the microbiology of cheeses; a study of special dairy products, such as ice cream and artificial milk drinks.

2 3-hour laboratory periods, credit, 3.
Professor BRADLEY and Miss GARVEY.

Prerequisite, Bacteriology 30.

PHYSIOLOGY.

Elective Courses.

33. **III. PHYSIOLOGY.**—For sophomores; juniors and seniors may elect. This course presents the subject of physiology from the standpoint of its definition and modern scope. It includes a plan of theoretical, demonstrational and practical work to illustrate the interrelation of the chemical, physical, and biological sciences with functional and behavioristic aspects of life. The course is suited to the needs of students who elect only one course in physiology, but students who complete it may continue the subject in a more advanced course.

2 class hours. 1 2-hour laboratory period, credit, 3.
Professor GAGE.

63. **I. PHYSIOLOGY.**—For juniors; seniors may elect. The object of this course is to adapt the elements of physiology to the modern viewpoint. The relationship and influence of experimental biology, physical chemistry, biochemistry and instruments of precision upon physiology are considered. It is planned as an introductory course for those who wish to do more advanced work in the subject. Applications and demonstrations will be made of the practical side of nutrition, circulation, exercise, mental work, fatigue, and neuromuscular activity as they relate to the conservation of human and animal life.

2 class hours. 1 2-hour laboratory period, credit, 3.
Professor GAGE.

64. **II. PHYSIOLOGY.**—For juniors; seniors may elect. Physiology of nutrition with special reference to intermediate and basal metabolism. Introductory work on nerves and nerve action, and a more detailed consideration of internal and external respiration.

2 class hours. 1 2-hour laboratory period, credit, 3.
Professor GAGE.

Prerequisite, Physiology 33 or 63.

65. **III. PHYSIOLOGY.**—For juniors; seniors may elect. Physiology of the circulation, absorption, and excretion, with special reference to gross and microscopic anatomy. Introduction to the physiology of the special senses. This course is especially planned for students who expect to major in subjects pertaining to plant and animal life.

2 class hours. 1 2-hour laboratory period, credit, 3.
Professor GAGE.

Prerequisite, Physiology 64.

Botany.

Professor OSMUN, Associate Professor CLARK, Assistant Professor TORREY, Assistant Professor DAVIS, Mr. VAN VEGHTEN, Mr. GILGUT.

The required courses in botany are planned to present a knowledge of the principles of plant life both for their general educational value and for their

fundamental importance in agriculture. Elective courses are of two types: (1) those which have for their chief aim the direct support of technical courses in agriculture and horticulture, and (2) those providing broader, more intensive training in the science. Courses in the second group may lead to specialization in the field. They also furnish excellent training for those specializing in other sciences and in scientific agriculture.

Required Courses.

[Courses 3 and 25 constitute a general elementary course in the botany of higher plants, and are required of all students; Course 26 is advised for all who intend to study further in the department.]

3. **III. INTRODUCTORY BOTANY.**—For freshmen. Presents the seed plants as plastic organisms molded by their environment. Also introduces the student to methods of identifying and classifying plants.

2 class hours. 2 2-hour laboratory periods, credit, 4.

Assistant Professor TORREY, Mr. VAN VEGHTEN and Mr. GILGUT.

25. **II. INTRODUCTORY BOTANY.**—For sophomores. The anatomy and physiology of seed plants (Phanerogamia).

1 class hour. 2 2-hour laboratory periods, credit, 3.

Prerequisite, Botany 3.

Assistant Professor TORREY, Mr. VAN VEGHTEN and Mr. GILGUT.

Elective Courses.

26. **III. CRYPTOGAMIC BOTANY.**—For sophomores; juniors and seniors may elect. Selected forms typifying the slime-molds, bacteria, blue-green and green algae, fungi and lichens. The course has a two-fold purpose: (1) it is intended for students who desire to extend their knowledge to the principal branches of the plant kingdom, thus rounding out a general course of which Botany 3 and 25 constitute the first two parts; (2) it is also planned as an introduction to the study of plant diseases by those students who expect to enter some branch of plant industry.

1 class hour. 2 2-hour laboratory periods, credit, 3.

Professor OSMUN.

Prerequisite, Botany 25.

50. **I. CRYPTOGAMIC BOTANY.**—For juniors; seniors may elect. This course continues the work of Botany 26, dealing with the brown and red algae, liverworts, mosses and fernworts.

1 class hour. 2 2-hour laboratory periods, credit, 3.

Professor OSMUN.

Prerequisite, Botany 26.

51. **I. DISEASES OF VEGETABLES (1932-33).**—For juniors and seniors. Study of the principal diseases of vegetables occurring in field and greenhouse, with especial attention to those important in Massachusetts, and consideration of combative measures. This course is planned and conducted primarily for students interested in vegetable gardening, but those intending to enter any branch of plant industry should find it of interest. Students who desire to extend their knowledge of plant diseases over a wider range of crops, may do so by taking, in addition to this, any or all of Courses 52, 53, and 54. Given in alternate years.

1 class hour. 2 2-hour laboratory periods, credit, 3.

Assistant Professor DAVIS.

52. **I. DISEASES OF FRUITS (1931-32).**—For juniors and seniors. The plan of this course is similar to that of Course 51 but it is intended primarily for students interested in pomology. Given in alternate years.

1 class hour. 2 2-hour laboratory periods, credit, 3.

Assistant Professor DAVIS.

53. **II. DISEASES OF FIELD CROPS (1932-33).**—For juniors and seniors. The plan of this course is similar to that of Course 51 but it is intended primarily for students interested in field crops. Given in alternate years.
1 class hour. 2 2-hour laboratory periods, credit, 3.
Assistant Professor DAVIS.

54. **II. DISEASES OF FLORICULTURAL CROPS, ORNAMENTALS, SHRUBS, AND TREES (1931-32).**—For juniors and seniors. The plan of this course is similar to that of Course 51 but it is intended primarily for students interested in floriculture, nursery practice and forestry. Given in alternate years.
1 class hour. 2 2-hour laboratory periods, credit, 3.
Assistant Professor DAVIS.

55. **III. DISEASES OF CROPS (1932-33).**—For juniors and seniors. This is a general course in which representative diseases of the principal crops grown in Massachusetts are studied. The plan of the course is otherwise similar to that of Course 51. It is intended for students majoring in entomology and others who desire a brief, general course of this nature.
1 class hour. 2 2-hour laboratory periods, credit, 3.
Assistant Professor DAVIS.

56. **I. MICROTECHNIQUE.**—For juniors and seniors. A course in the preparation of microscopic mounts including the celloidin and paraffin methods and involving the use of microtomes and of differential stains.
3 2-hour laboratory periods, credit, 3.
Assistant Professor TORREY.

58. **I.** 59. **II.** 60. **III. SYSTEMATIC BOTANY OF THE HIGHER PLANTS (1932-33).**—Alternate with Courses 61, 62, and 63. For juniors and seniors. An intensive study of gymnosperms and angiosperms. Lectures deal with the interrelations of the flowering plants and with their ecology, distribution, and economic importance. Laboratory work consists of a critical study of types from the most important natural plant families. Particular emphasis is laid on the flora of Massachusetts. The department herbarium and greenhouses supply material of important tropical forms for study.
2 class hours. 1 2-hour laboratory period, credit, 3.
Assistant Professor TORREY.

61. **I.** 62. **II.** 63. **III. THE COMPARATIVE ANATOMY OF GREEN PLANTS (1931-32).**—Alternate with Courses 58, 59, and 60. For juniors and seniors. In the lectures an intensive study is directed to the comparative anatomy of green plants from the evolutionary standpoint. Particular emphasis is laid upon the woody forms both living and extinct. Of the latter, the department is fortunate in possessing excellent sets of micro-preparations and lantern slides.
2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor TORREY.

Prerequisite, Botany 26.

75. **I.** 76. **II.** 77. **III. PLANT PATHOLOGY.**—For seniors. Comprehensive study of diseases of plants; training in laboratory methods and technique, including culture work and artificial inoculation of hosts; miscellaneous diagnosis; study of literature and representative life histories of pathogens. Prepares for civil service, experiment station, and college work.
1 class hour. 4 2-hour laboratory periods, credit, 5.
Professors OSMUN and DAVIS.

Prerequisite, Botany 26.

78. **I. PLANT PHYSIOLOGY.**—For seniors. Study of the factors and conditions of (a) plant nutrition, including the taking up of water and mineral substances, the assimilation of carbon and nitrogen, and the release of energy

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due to the processes of dissimilation; (b) plant growth, including the influence of internal and external factors on growth, the development of reproductive and vegetative organs; (c) plant movements, including those due to the taking up of water, and those of both motile and fixed forms in response to external stimuli. Weekly conferences are held, at which students report on assignments to original sources in the literature.

2 class hours.

3 2-hour laboratory periods, credit, 5.
Associate Professor CLARK.

Prerequisites, Botany 26; Chemistry 51.

79A. II. 80A. III. PLANT PHYSIOLOGY.—For seniors. As stated under Course 78.

2 class hours.

3 2-hour laboratory periods, credit, 5.
Associate Professor CLARK.

Prerequisite, Botany 78.

79B. II. 80B. III. PLANT PHYSIOLOGY.—For seniors; juniors may elect. A briefer course than Botany 78, 79A, 80A, designed especially for students in horticulture, agronomy, and floriculture, and aiming to give the underlying principles of plant physiology which will supply the scientific basis for the manifold practices in the various fields of plant culture.

2 class hours.

1 2-hour laboratory period, credit, 3.
Associate Professor CLARK.

Prerequisite, Chemistry 30.

81. I. PLANT ECOLOGY.—For seniors. Study of plants in relation to their environment, with special emphasis on the newer field studies, which have given increasing insight into the physical and chemical factors as they influence growth and development in the field and the adaptability of plants to changes in their normal environment. The various types of plant formations and successions are studied, as well as the mutual and antagonistic relations of certain plants.

2 class hours.

1 2-hour laboratory period, credit, 3.
Associate Professor CLARK.

Chemistry.

Professor CHAMBERLAIN, Professor PETERS, Assistant Professor SEREX, Mr. PARROTT.

In teaching the courses in chemistry, emphasis is laid on both their educational and their vocational value. The courses in the freshman year deal with fundamental principles and give the student such an understanding of the subject as will enable him to appreciate the relation of chemistry to the other sciences and to agriculture and industry. The more advanced courses, including quantitative analysis, organic, physiological, and physical chemistry, are for those who intend to take up graduate study, to become teachers and workers in the allied sciences, or who desire to follow chemistry as a vocation. Those completing the undergraduate courses are fitted for positions in the agricultural industries—fertilizer, feed, and insecticide manufacture—as well as in other lines of industry, and in the State experiment stations, Federal departments, commercial laboratories, and in high school teaching. Postgraduate students are prepared for positions as teachers in colleges, and for more advanced positions in industry and in the experiment stations.

Required Courses.

1. I. 2. II. GENERAL CHEMISTRY.—For freshmen who have not had chemistry and who begin the subject in college. It presents an introduction to the fundamental chemical laws, together with a study of the typical acid- and base-forming elements and their compounds. The second term contains some of the material given in Courses 4 and 5.

2 class hours.

2 2-hour laboratory periods, credit, 4.
Mr. PARROTT.

4. I. 5. II. GENERAL CHEMISTRY.—For freshmen who have had chemistry in preparatory or high school. A review of general chemistry with special emphasis on the fundamental laws and theories; periodic system, atomic structure, properties of solutions, ionization and equilibria. The laboratory work for the first term includes exercises illustrating and emphasizing the subject matter of the course. In the second term the laboratory work is synthetic in character, the student preparing such compounds as sodium chloride, potassium chloride and sulfate, lead nitrate, ammonium sulfate and other substances of importance in industry and agriculture.

2 class hours.

2 2-hour laboratory periods, credit, 4.
Assistant Professor SEREX.

Elective Courses.

25. II. QUALITATIVE ANALYSIS.—*Basic*.—For sophomores. The systematic analysis of metallic salts, presented from the ionic viewpoint. A close study of the tests used in the separation and identification of the metals, and the application of these tests to unknown mixtures. This course should be taken by all intending to follow chemistry as a vocation.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Assistant Professor SEREX.

Prerequisite, Chemistry 2 or 5.

26. III. QUALITATIVE ANALYSIS.—*Acidic*.—For sophomores. A continuation of Course 25.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Assistant Professor SEREX.

29. I. QUALITATIVE AGRICULTURAL CHEMISTRY.—For sophomores. Embraces a study of the important inorganic elements in plant life, the atmosphere, water, soil and its formation, fertilizers, insecticides and fungicides. The laboratory work will be qualitative in nature, dealing with substances utilized in agriculture. This course should not be taken by those intending to follow chemistry as a vocation or as a pre-medical requirement.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Assistant Professor SEREX.

Prerequisite, Chemistry 2 or 5.

30. II. ORGANIC AGRICULTURAL CHEMISTRY.—For sophomores; juniors and seniors may elect. Embraces the study of the most important groups of organic compounds of plants and animals, the composition of plants, the chemistry of plant growth, plants as food and as industrial material, the composition of animals, the chemistry of digestion, also the study of some of the products related to plants and animals, such as milk, butter, cheese, sugar, and alcohol. The treatment of the subject is general, avoiding (so far as possible) complicated chemical facts and relationships, and endeavoring simply to make the student acquainted with the general chemistry of plants and animals and agricultural processes and products.

3 class hours.

Credit, 3.
Mr. PARROTT.

51. I. 52. II. 53. III. ORGANIC CHEMISTRY.—For juniors; seniors may elect. A systematic study, both from texts and in the laboratory, of the more important compounds in the entire field of organic chemistry. Especial attention is given to those compounds which are found in agricultural products or are manufactured from them. These include alcohols, acids, esters, fats, carbohydrates, and proteins. In the third term compounds in the benzene series are considered. The work forms a foundation for courses in physiological chemistry and agricultural analysis, and is especially planned for those majoring in chemistry or the other sciences.

3 class hours.

2 3-hour laboratory periods, credit, 6.
Professor CHAMBERLAIN.

Prerequisite, Chemistry 2 or 5. Chemistry 26 is prerequisite for those majoring in chemistry.

61. **I. QUANTITATIVE ANALYSIS.**—For juniors; seniors may elect. The course includes the gravimetric determination of chlorides, sulfates, iron; the volumetric analysis of acids and bases; and the dichromate method for iron.
1 class hour. 2 4-hour laboratory periods, credit, 5.
Professor PETERS.

Prerequisite, Chemistry 25. Chemistry 26 is prerequisite for those majoring in chemistry.

62. **II.** For juniors; seniors may elect. A continuation of Course 61. A study of potassium permanganate as a volumetric reagent; limestone is analyzed; phosphorus is determined in soil; and the perchlorate method for potash is carried out. Analytical problems are a part of the work.
2 class hours. 2 4-hour laboratory periods, credit, 6.
Professor PETERS.

63. **III.** For juniors; seniors may elect. A continuation of Course 62. A study of the oxidation reactions of iodine and the precipitating reactions of thiocyanate; the analysis of Paris green and lead arsenate. The work closes with water analysis. By means of assigned readings, students are shown the importance of library work.
1 class hour. 2 4-hour laboratory periods, credit, 5.
Professor PETERS.

75. **I. PHYSICAL CHEMISTRY.**—For seniors. A study of the fundamental theories and laws of physical chemistry, together with laboratory work which includes the important methods of physicochemical measurements.
3 class hours. 6 laboratory hours, credit, 6.
Assistant Professor SEREX.

Prerequisite, Chemistry 61.

80. **I. PHYSIOLOGICAL CHEMISTRY.**—For seniors. Supplementary to Courses 51, 52, and 53. For those who expect to take up scientific work in microbiology, botany, agronomy, animal husbandry, etc., and who have had Courses 51, 52, and 53, it gives acquaintance with the chemistry of the physiological processes in plants and animals, by means of which some of the important organic compounds studied in Courses 51, 52, and 53 are built up in the living organism or are used as food by it. In the lectures, the study of food and nutrition as related to both human and domestic animals is the principal subject. In the laboratory, experimental studies are made of the animal body and of the processes and products of digestion, secretion, and excretion.
3 class hours. 2 2-hour laboratory periods, credit, 5.
Professor CHAMBERLAIN.

81. **II. FOOD ANALYSIS.**—For seniors. Primarily the analytical study of milk and butter. May also include the analysis of other food stuffs for nutritive value or for impurities. Not offered 1931-32.
1 class hour. 2 4-hour laboratory periods, credit, 5.

Prerequisite, Chemistry 61.

86. **II. REVIEW OF GENERAL CHEMISTRY.**—For seniors. Primarily for students majoring in chemistry; others may elect by permission of the instructor. A knowledge of physical chemistry is desirable. The review of general chemistry is largely theoretical. Some subjects may be enlarged by special lectures, such as atomic structure, Werner's co-ordination theory, crystal structure as shown by X-rays.
3 class hours. Credit, 3.
Professor PETERS.

87. **III. HISTORY OF CHEMISTRY.**—For seniors. An historical and biographical study of chemistry and chemists. The aim of the course is: (1) to

give the student a comprehensive view of the science as a whole, through a study of the development of new ideas and the establishment of new theories and laws; and (2) to arouse an enthusiastic interest in the subject and an appreciation of the true spirit of scientific research, through a sympathetic presentation of the work and lives of the great chemists who have been the creators of the chemistry of today. The course will consist of lectures, supplemented by systematic correlated reading and the preparation of reports or essays.

3 class hours.

Credit, 3.

Professor CHAMBERLAIN.

90. II. 91. III. SPECIAL WORK IN CHEMICAL PROBLEMS.—For seniors. An assignment is made to each student, and he is expected to learn how research is done. The problem may be in analytical, general, agricultural, or industrial chemistry, and is to be continued for two terms.

1 class hour.

8 laboratory hours, credit, 5.

Professor PETERS.

92. II. 93. III. SPECIAL WORK IN ORGANIC CHEMISTRY.—For seniors. In this course, as in Courses 90 to 97, the student may give his attention primarily to one line of chemical study for the purpose of becoming acquainted with methods of research. To those whose tastes and interests are in connection with the organic and agricultural problems of chemistry, many subjects of study present themselves, among which may be mentioned: proteins, carbohydrates, fats; organic nitrogenous compounds in fertilizers and soils, and their relation to plants; the commercial production of alcohol from agricultural products; dyes, synthetic medicines, perfumes, etc.

1 class hour.

8 laboratory hours, credit, 5.

Professor CHAMBERLAIN.

Prerequisites, Chemistry 51, 52, 53, and 80.

94. II. 95. III. SPECIAL WORK IN PHYSICAL CHEMISTRY.—For seniors. The field of agricultural chemistry offers many problems that have been attacked through the methods of physical chemistry; such, for example, are the hydrolysis of salts and of minerals and the absorption of salts and fertilizers by soils. This course is designed to familiarize the student with the literature on a special topic, and to give an insight into the methods of research. Each student selects one line of work and follows it through the course, repeating some of the original work. Students interested in colloid chemistry may make a brief study of fundamentals during the first term of this course, with the ultimate object of selecting a problem along this line for the second term.

1 class hour.

8 laboratory hours, credit, 5.

Assistant Professor SEREX.

Prerequisite, Chemistry 75.

96. II. 97. III. SPECIAL WORK IN PHYSIOLOGICAL AND FOOD CHEMISTRY.—For seniors. An opportunity for those so interested to pursue the study of some physiological or food problem. This course is intended to familiarize the student with the nature of research under the careful supervision of the instructor. The problems of physiological chemistry are of a varied and interesting character.

1 class hour.

8 laboratory hours, credit, 5.

Professor CHAMBERLAIN.

Prerequisite, Chemistry 80.

Entomology, Zoology, and Geology.

Professor GORDON, Professor ALEXANDER, Professor CRAMPTON, Assistant Professor SWEETMAN,
Assistant Professor FARRAR, Miss MORSE.

Courses in entomology are for two purposes: (1) the introductory courses aim to give the students a general knowledge of insects, particularly in their relations to man, his crops, his domestic animals, and his health. (2) Later courses

are intended to train students desiring to specialize in entomology to become United States, State, or experiment station entomologists, teachers, foresters, tree wardens, entomologists connected with insecticide-manufacturing companies, consulting entomologists, or to occupy other positions where an expert knowledge of insects is called for. The beekeeping courses are offered with the following aims: (1) To meet the increase in vocational opportunities for the production of bees or honey as a business. (2) To study the beekeeping needs of fruit and truck-crop industries and the part that bees play in pollinating flowers. (3) To acquaint the student with a recreational field of many phases, which can be made profitable.

The offerings in zoology comprise (1) a group of introductory courses intended primarily for sophomores, and (2) a number of distinct and somewhat special courses of more advanced nature.

ENTOMOLOGY.

Elective Courses.

26. **II. GENERAL AND ECONOMIC ENTOMOLOGY.**—Primarily for sophomores intending to major in one of the biological sciences; other sophomores, juniors, and seniors may elect. For students who desire some knowledge of insects but who cannot give more than one term to the subject; also an introduction to the later courses for those who intend to follow entomology further. Touches briefly upon the structure of insects, so far as this is needed for such a course; deals with metamorphosis and classification to the larger groups, and discusses the most important methods and materials used for control. The greater part of the time is devoted to special study of the most important insect pests, particularly of New England, showing their modes of life, the injuries they cause, and the best methods of control. In this way the most serious pests of fruit trees, ornamental trees and shrubs, market-garden and green-house crops, field crops, animals, and man are treated.

3 class hours.

Credit, 3.

Professor ALEXANDER.

28. **III. FIELD STUDIES IN ENTOMOLOGY.**—For sophomores intending to major in one of the biological sciences; other sophomores, juniors, and seniors admitted by permission of instructor in charge. Three class-room exercises to about May 1; thereafter three field exercises per week. In the field the work of insects found will be studied and a collection of insects made. Methods of collecting, preparing, and mounting insects for collections will be taught. In the class room, until about May 1, studies preparatory to the field work will be given. Class limited.

3 class hours to about May 1; thereafter, 3 2-hour laboratory periods, credit, 3.

The DEPARTMENT.

Prerequisite, Entomology 26.

50. **I. PESTS OF SPECIAL CROPS.**—For juniors and seniors not majoring in entomology. The laboratory work is largely individual in this course. Students majoring in subjects other than entomology, who desire a more complete knowledge of the insects connected with their major lines of work, can obtain it through this course. Work consisting of a careful study of the important economic insect pests leads to an ability to recognize their different stages, and their work, and to a knowledge of the best methods for their control. Work of this kind is available on the insects attacking field crops, market-garden crops, tree fruits, small fruits, shade trees and shrubs, forest trees, flowers, the domestic animals, household articles, and man. This course can also be begun or continued in the winter term as Course 51.

3 2-hour laboratory periods, credit, 3

Assistant Professor FARRAR.

Prerequisite, Entomology 26.

51. **II. PESTS OF SPECIAL CROPS.**—For juniors; seniors may elect. Individual laboratory work in the more important insect pests in this country and the preparation and presentation of bulletin material on them.

3 2-hour laboratory periods, credit, 3.
Assistant Professor FARRAR.

Prerequisite, Entomology 26.

52. **I. CLASSIFICATION OF INSECTS.**—For juniors specializing in entomology. Laboratory work on the identification and classification of insects of various groups.

2 2-hour laboratory periods, credit, 2.
Professor ALEXANDER.

Accompanying Entomology 53.

53. **I. INSECT MORPHOLOGY.**—For juniors specializing in entomology, and for other juniors or seniors having the prerequisite. The lectures treat of the external anatomy of insects, particularly those parts used in identification, a knowledge of which is needed in the accompanying Course 52. In the laboratory the external anatomy of the most important groups is studied, with emphasis on the characters used in learning the names of insects, and on the methods of using analytical keys.

2 class hours.

3 2-hour laboratory periods, credit, 5.
Professor CRAMPTON.

Prerequisite, Entomology 26.

55. **II. CLASSIFICATION OF INSECTS.**—Continuation of Course 52.

2 2-hour laboratory periods, credit, 2.
Professor ALEXANDER.

57. **III. CLASSIFICATION OF INSECTS.**—Continuation of Course 55.

2 2-hour laboratory periods, credit, 2.
Professor ALEXANDER.

58. **II. MEDICAL ENTOMOLOGY.**—For juniors. Diseases of man, animals, and plants transmitted by insects and other arthropods.

1 class hour.

1 2-hour laboratory period, credit, 2.
Professor CRAMPTON.

59. **II. INSECT PHYSIOLOGY.**—For juniors. A consideration of the organs of the insect body and their functions, with especial reference to respiration and nutrition; the relationship of physiology to behavior, biochemistry and biophysics.

3 class hours.

Credit, 3.
Assistant Professor SWEETMAN.

75. **III. FOREST AND SHADE-TREE INSECTS.**—For juniors; seniors may elect. The lecture work deals with the principles and methods of controlling insects which attack forests and forest products, shade trees, etc. The laboratory periods are devoted to a study of the more important species, their identification, biology, and specific control measures. Field work supplements laboratory study if time permits. One entire Saturday for field excursion is also required.

1 class hour.

3 2-hour laboratory or field periods, credit, 4.
Professor ALEXANDER.

Prerequisite, Entomology 26; 52 and 53 desirable.

76. **I. ADVANCED ENTOMOLOGY.**—For seniors. Studies on internal anatomy and organology of insects.

1 class hour.

1 2-hour laboratory period, credit, 2.
Professor CRAMPTON.

77. **II. ADVANCED ENTOMOLOGY.**—For seniors. Studies of the life history, habits, and methods of control of the important insect pests of the United

Part II. 77
States; recognition tests of these pests, and an examination of the literature on them; methods of bulletin preparation.
3 2-hour laboratory periods, credit, 3.
Professor ALEXANDER.

Prerequisite, Entomology 76.

78. **III. ADVANCED ENTOMOLOGY.**—For seniors. Immature stages of insects.
1 class hour. 1 2-hour laboratory period, credit, 2.
Professor CRAMPTON.

79. **I. INSECTICIDES AND THEIR APPLICATION.**—For seniors; juniors may elect. Lectures on the composition, preparation, and methods of application of insecticides; other control measures.
3 class hours. Credit, 3.
Assistant Professor SWEETMAN.

Prerequisite, Entomology 26.

80. **I. INSECT ECOLOGY.**—For seniors. The relation of the insect to its environment, covering the topics: definitions, present status of the subject, factors of environment such as temperature, moisture, light, etc., and their effect; the biotic potential; environmental resistance; ecological succession; aquatic and terrestrial insect communities; applied ecology.
3 class hours. Credit, 3.
Assistant Professor SWEETMAN.

Prerequisite, Entomology 57.

81. **II. BIOLOGICAL CONTROL.**—For seniors. The topics treated in this course include types of parasitic organisms; insect diseases; other organisms as parasites of insects; insect parasites; predators; the natural ecological status of insect parasitism and the economic status of parasites.
3 class hours. Credit, 3.
Assistant Professor SWEETMAN.

Prerequisite, Entomology 80.

82. **III. INSECTARY PRACTICE.**—For seniors majoring in entomology. Each student is assigned an individual problem which is to be conducted on a research basis during the quarter. The problem may deal with any of the following subjects: physiology, insecticides, ecology, biological control, or economic entomology.
1 class hour. 2 2-hour laboratory periods, credit, 3.
Assistant Professor SWEETMAN.

Prerequisite, Entomology 81.

83. **I. ADVANCED ENTOMOLOGY.**—For seniors. Scale insects, their structure, habits; methods of mounting; identification.
1 class hour. 2 2-hour laboratory periods, credit, 3.
Professor CRAMPTON.

84. **III. ADVANCED ENTOMOLOGY.**—For seniors. Classification of the minor orders of insects.
1 class hour. 1 2-hour laboratory period, credit, 2.
Professor ALEXANDER.

90. **II. EVOLUTION.**—For seniors; juniors may elect. In order to demonstrate the universal scope and operation of the laws of evolution, the course includes a brief sketch of the probable origin and evolution of matter as viewed in the light of modern physical and chemical research; the evolution of the solar system, leading to the formation of the earth; the changes in the earth, preparatory to the production of life; the physical and chemical basis of life; the probable steps in the formation of living matter, and the theories concerning it; the evolution of living things; the developmental history of man, and of the races of mankind; the evolution of human intelligence, languages, culture, institutions, etc., and man's probable future in the light of his past development. Especial

consideration is given to the factors of evolution, the basic principles of heredity, variation, and similar topics, with particular reference to their application to human welfare; and the recent contributions in the field of entomology to the advancement of our knowledge of these fundamental principles are briefly reviewed.

3 class hours.

Credit, 3.

Professor CRAMPTON.

BEEKEEPING.

Elective Courses.

65. **III. INTRODUCTORY BEEKEEPING.**—For juniors; seniors may elect. A detailed study is made of the bee colony, including its organization, the life of its individuals in relation to the colony, and the cycle of the year. Attention is given to practical methods of managing colonies during the spring and early summer. Spring pollen, nectar flora, and the horticulturist's use and need of bees are other phases of the work covered. The laboratory work provides a study of beekeeping equipment; individual manipulation and an understanding of colony development is afforded. During the first half of the term a lecture is substituted for one of the laboratory periods. To be complete, this course should be followed by Course 85.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Assistant Professor FARRAR.

85. **I. INTRODUCTORY BEEKEEPING.**—For seniors. The work begun in Course 65 is continued for the completion of the beekeeping year, including late summer and fall management, wintering, and care and marketing of the crop. A more detailed study is made of regional differences, methods, and requirements for different types of honey production.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor FARRAR.

Prerequisite, Entomology 65.

86. **II. ADVANCED BEEKEEPING.**—For seniors. Advanced studies are made of important beekeeping problems, including anatomy and physiology; senses and bee behavior; soil and climatic factors influencing nectar secretion; kinds, importance, and distribution of pollen and nectar sources; bee disease control; marketing problems; queen rearing and commercial bee production. Parts of this work are made individual, depending on the needs of the student.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor FARRAR.

Prerequisite, Entomology 85.

ZOOLOGY.

Elective Courses.

26. **I. ELEMENTS OF ZOOLOGY.**—For sophomores; juniors and seniors may elect. This course consists of an elementary treatment of the principles of animal biology, and provides a measure of preparation for such subsequent studies as assume some acquaintance with the phenomena of animal life.

2 class hours.

1 2-hour laboratory period, credit, 3.

The DEPARTMENT.

27. **II. ELEMENTARY VERTEBRATE ZOOLOGY.**—Required of sophomores specializing in zoology and entomology; other sophomores, juniors, and seniors may elect. This course deals with the structure of the vertebrate, and is adapted to the needs of prospective students in zoology, general biology, veterinary science, physiology, etc.

1 class hour.

2 2-hour laboratory periods, credit, 3.

The DEPARTMENT.

Prerequisite, Zoology 26.

28. **III. FORMS OF INVERTEBRATE ANIMALS.**—Required of sophomores specializing in zoology and entomology; other sophomores, juniors, and seniors may elect. This course is designed chiefly to afford a synoptic view of the main groups of non-vertebrated animals, and is intended for future students of entomology, zoology, and general biology.

1 class hour.

2 2-hour laboratory periods, credit, 3.
The DEPARTMENT.

Prerequisite, Zoology 26.

50. **II. ELEMENTS OF MICROSCOPIC TECHNIQUE.**—For juniors; seniors and graduate students may elect. Open to students upon consultation with the department. The course consists of a series of practical exercises in preparing animal tissues for microscopic examination, and a study of principles and methods involved in such work.

3 2-hour laboratory periods, credit, 3.
The DEPARTMENT.

Prerequisite, Zoology 26.

65. **I. 66. II. 67. III. COMPARATIVE VERTEBRATE ZOOLOGY.**—For juniors, seniors, and graduate students. The work is arranged to run through the year and is adapted to the needs of premedical students.

1 class hour.

2 2-hour laboratory periods, credit, 3.
The DEPARTMENT.

Prerequisite, Zoology, 26.

69. **I. 70. II. 71. III. COMPARATIVE INVERTEBRATE ZOOLOGY.**—For juniors, seniors, and graduate students. This course is designed for students interested in the special field of invertebrate morphology. Both living and fossil forms are studied. The work is arranged to run through the year, but students in entomology are free to elect only the course offered in the spring term (71. III), which deals chiefly with arthropods.

1 class hour.

2 2-hour laboratory periods, credit, 3.
The DEPARTMENT.

Prerequisite, Zoology 26.

75. **I. 76. II. 77. III. EMBRYOLOGY.**—For juniors, seniors and graduate students. Students are admitted to these courses only upon consultation with the department. The work in each term is more or less distinct, as explained below. Course 75. I. deals with the basic principles of development, heredity, and sex in animals, and is open to students who have had Zoology 26. Course 76. II. treats of the early stages of development of the chick, and is open to students who have previously taken or are pursuing work in comparative vertebrate zoology, and to qualified students who wish an introduction to the development of the chick in connection with their work in other departments. Course 77. III. deals with the development of the mammal and is open to students who have previously taken or are pursuing work in comparative vertebrate zoology and who have had Course 76. II.

1 class hour.

2 2-hour laboratory periods, credit, 3.
The DEPARTMENT.

Prerequisites, as stated above.

79. **III. ORNITHOLOGY.**—For juniors; seniors and others may elect. The taxonomic characters, relationships, adaptive radiation, migrations, distribution, and habits of birds. Lectures, practical exercises in the museum, and studies in the field.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Professor GORDON.

85. **I. 86. II. 87. III. SPECIAL PROBLEMS.**—For seniors and graduate students. Seniors who are pursuing a major in biology, and graduate students who wish to take a minor in the department, may arrange for special work.

Credit, 3.
Professor GORDON.

GEOLOGY.

Elective Courses.

Each of the courses named below is distinct, so that a student may elect only one, or any two, or all three, in any sequence. For those who wish a year's work in geology, the desirable sequence is in the order given.

50. **I. ELEMENTS OF PETROLOGY.**—For juniors, seniors, and graduate students. This course deals with the rock-forming minerals and the various kinds of rocks, by means of lectures and laboratory studies, with discussions of the processes by which rocks are formed, and their modes of occurrence and structural features.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Professor GORDON.

51. **II. DYNAMIC AND PHYSIOGRAPHIC GEOLOGY.**—For juniors, seniors, and graduate students. A study of the work of the various agents that shape the surfaces of the lands. The history of the development of land forms.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor GORDON.

52. **III. HISTORICAL GEOLOGY.**—For juniors, seniors, and graduate students. A review of the more important events in the physical history of North America, and of the plants and animals of the past.

3 class hours.

Credit, 3.

Professor GORDON.

Mathematics and Civil Engineering.

Professor OSTRANDER, Professor MACHMER, Assistant Professor MOORE, Mr. BOUTELLE.

The work of the freshman year is required. It is intended to furnish the necessary drill and groundwork needed for many of the scientific and practical courses of other departments. Thoroughness and accuracy are insisted upon. The advanced work in mathematics is taught from a practical standpoint, and many of its applications to other subjects are given. The courses in surveying and civil engineering are given to furnish the groundwork for a professional career. Special emphasis is given to the subjects bearing on highway construction and maintenance.

Required Courses.

1. **I. HIGHER ALGEBRA.**—For freshmen. A brief review of radicals, quadratic equations, ratio and proportion, and progressions; graphs, binomial theorem, summation of series, variation, determinants, permutations and combinations, logarithms, and theory of equations.

3 class hours.

Credit, 3.

Professors MACHMER, MOORE, and Mr. BOUTELLE.

2. **II. PLANE TRIGONOMETRY.**—For freshmen. The trigonometric functions as lines and ratios; proofs of the principal formulas, transformations; inverse functions, use of logarithms; the applications to the solution of right and oblique triangles; practical applications; trigonometric equations.

3 class hours.

Credit, 3.

Professors MACHMER, MOORE, and Mr. BOUTELLE.

3. **III. MATHEMATICAL ANALYSIS.**—For freshmen. A review of methods of computation, with special emphasis on short processes and the making of close approximations. A study of some of the different modes of variation; finding the exact or approximate relations (equations) between the varying quantities, particularly as illustrated by the use of the graph. Also a study of the properties of closed figures, such as polyhedra, cylinders, cones, and the sphere, and calculations of their surfaces and volumes. An effort is made to apply mathematical processes directly to the work given in the various technical departments of the college.

3 class hours.

Credit, 3.

Professors MACHMER, MOORE, and Mr. BOUTELLE.

Elective Courses.

26. **II. PLANE SURVEYING.**—For sophomores; juniors and seniors may elect. The elements of the subject, including the adjustment and use of the usual instruments. Textbook and lectures.
3 class hours.

Credit, 3.

Professors OSTRANDER and MOORE.

27. **III. PLANE SURVEYING.**—For sophomores; juniors and seniors may elect. As stated under Course 26. Includes field work.

3 2-hour laboratory periods, credit, 3.

Professors OSTRANDER and MOORE.

Prerequisite, Mathematics 26.

28. **I. ANALYTICAL GEOMETRY.**—For sophomores and juniors; seniors may elect. A discussion of the geometry of the line, the circle, conic sections, and the higher plane curves.

3 class hours.

Credit, 3.

Professor MACHMER.

Prerequisites, Mathematics 1, 2, and 3.

29. **II. DIFFERENTIAL CALCULUS.**—For sophomores and juniors; seniors may elect. The basic ideas and methods of the differential calculus. The course aims to give the student a realization of the power of the calculus as an instrument for dealing with problems of geometry and the physical sciences.

3 class hours.

Credit, 3.

Assistant Professor MOORE.

Prerequisite, Mathematics 28.

30. **III. DIFFERENTIAL AND INTEGRAL CALCULUS.**—For sophomores and juniors; seniors may elect. A continuation of Mathematics 29 into the field of the integral calculus.

3 class hours.

Credit, 3.

Assistant Professor MOORE.

Prerequisite, Mathematics 29.

50. **I. INTEGRAL CALCULUS.**—For juniors; seniors may elect. A continuation of Mathematics 30 with special emphasis upon the rate problems in physics and chemistry.

3 class hours.

Credit, 3.

Assistant Professor MOORE.

Prerequisite, Mathematics 30.

53. **II. ELEMENTARY STRUCTURES.**—For juniors; seniors may elect. An elementary course in roofs and bridges. Textbook and lectures.

3 class hours.

1 2-hour laboratory period, credit, 4.

Professor OSTRANDER.

75. **I. HYDRAULICS AND SANITARY ENGINEERING.**—For seniors; juniors may elect. Hydrostatics, theoretical hydraulics, orifices, weirs, pipes, conduits, water supply, hydraulic motors, sewers and sewage treatment. Textbook and lectures.

5 class hours.

Credit, 5.

Professor OSTRANDER.

76. **I. MATERIALS OF CONSTRUCTION. FOUNDATIONS AND MASONRY CONSTRUCTION.**—For seniors; juniors may elect. Textbook and lectures.

5 class hours.

Credit, 5.

Professor OSTRANDER.

77. **II. ROADS AND RAILROADS.**—For seniors; juniors may elect. Topographic and higher surveying, highway construction, earthwork, pavements, and railroad construction. Textbook and lectures.

3 class hours.

Credit, 3.

Professor OSTRANDER.

78. **III. ROADS AND RAILROADS.**—For seniors; juniors may elect. As stated under Course 77.

3 2-hour laboratory periods, credit, 3.
Professor OSTRANDER.

Prerequisite, Mathematics 77.

91. **II. 92. III. DIFFERENTIAL AND EMPIRICAL EQUATIONS.**—For seniors. A course dealing with the methods of solution of the simpler forms of differential equations and their applications to analogous operations in the applied sciences, particularly to chemical reactions. Attention is also given to the various methods of determining empirical equations from observed data, and the interpretation of the various constants involved.

3 class hours. Credit, 3.
Assistant Professor MOORE.

Prerequisite, Mathematics 50.

Physics.

Professor POWERS, Assistant Professor ALDERMAN.

The courses in this department present a basic study of the physical laws and phenomena of nature with special emphasis on the applications of the principles studied. These courses furnish satisfactory training for pre-medical students and for prospective teachers in secondary schools. Courses 25, 26, and 27 constitute a study in general physics. The other courses afford opportunity for more advanced and individual work.

Elective Courses.

25. **I. MECHANICS.**—For sophomores; juniors and seniors may elect. This course is largely a study of the following and related topics: equilibrium of bodies; forms of energy and work; types of motion; fluids; surface tension; molecular phenomena; elasticity; wave-motion.

2 class hours. 1 2-hour laboratory period, credit, 3.
The DEPARTMENT.

26. **II. MAGNETISM AND ELECTRICITY.**—For sophomores; juniors and seniors may elect. Includes magnetism, electrostatics, production and properties of electric currents, electrical appliances and machines, oscillatory circuits, vacuum tubes, and related topics.

2 class hours. 1 2-hour laboratory period, credit, 3.
The DEPARTMENT.

27. **III. HEAT AND LIGHT.**—For sophomores; juniors and seniors may elect. Thermometry, expansion, hygrometry, transmission of heat, changes of state, radiation; wave theory of light, optical instruments, analysis of light, interference, polarization; allied subjects.

2 class hours. 1 2-hour laboratory period, credit, 3.
The DEPARTMENT.

50. **I. 51. II. 52. III. MAGNETISM, ELECTRICITY, PHOTO-ELECTRICITY, THERMIONICS, AND APPLICATIONS.**—For juniors and seniors. Course 50 deals largely with direct currents, Course 51 with alternating currents, and Course 52 with applications of thermionics and photo-electricity. These courses are planned to give the student a good grounding in theory and methods of measurement in the subjects indicated, which are useful in many fields of investigation. Modern methods are stressed and instruments of precision are used.

2 class hours. 1 2-hour laboratory period, credit, 3.
Professor POWERS.

Prerequisites, Physics 26 for Courses 50 and 51; Physics 51 for Course 52.

54. **II. THERMODYNAMICS.**—For juniors; seniors may elect. A study of energy changes due to heat in systems of matter. The subject material and experimental methods are useful in other branches of science.

2 class hours. 1 2-hour laboratory period, credit, 3.
Assistant Professor ALDERMAN.

Prerequisite, Physics 27.

55. **III. OPTICS.**—For juniors; seniors may elect. An intermediate course in the theory of light. Work in geometrical and physical optics is done. Precision instruments are used in the laboratory.
2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor ALDERMAN.

Prerequisite, Physics 27.

75. **I.** 76. **II.** 77. **III. ADVANCED EXPERIMENTAL WORK IN SELECTED TOPICS.**—For seniors. These courses are largely experimental, and the subject matter is adapted to the needs of the individual student. The research viewpoint is emphasized.

3 2-hour laboratory periods, credit, 3.
Professor POWERS.

Prerequisites, Physics 25, 26, 27, 50, 51, and 52; Mathematics 29 and 30.

85. **I.** 86. **II.** 87. **III. MODERN PHYSICS.**—For seniors. Typical subjects to be considered are theories of the atom, radiation, quantum theory, spectra, X-ray analysis, etc.

Credit, 3.
Professor POWERS.

Prerequisites, Physics 25, 27, 50, 52, 54, 55, or equivalent; Mathematics 29 and 30.

Veterinary Science.

Professor LENTZ.

The courses in veterinary science have been arranged to meet the needs (1) of students who propose following practical agriculture; (2) of prospective students of human and veterinary medicine; and (3) of teachers and workers in the biological sciences.

Elective Courses.

50. **II. VETERINARY HYGIENE.**—For juniors; seniors may elect. Acquaints students with the influences which air, water, feed, light, disposal of animal waste material, etc., may have upon the health of animals and upon the health of those who use both animals and animal products.
3 class hours.

Credit, 3.
Professor LENTZ.

75. **I. COMPARATIVE VETERINARY ANATOMY.**—For seniors; juniors may elect. The structure of the horse is studied and the structure of the other farm animals compared with it. This is a lecture and demonstrational course—not dissection—and is essential for students who wish to elect Veterinary 77.
3 class hours.

Credit, 3.
Professor LENTZ.

76. **II. GENERAL VETERINARY PATHOLOGY.**—For seniors; juniors may elect. A study of fundamental, general pathological conditions; inflammation, fever, hypertrophy, atrophy, etc., a knowledge of which is essential in the prevention of disease. Therapeutic measures and poisonous plants are considered briefly.
3 class hours.

Credit, 3.
Professor LENTZ.

77. **III. APPLIED GENERAL VETERINARY PATHOLOGY.**—For seniors; juniors may elect. A continuation of Course 76, with specific application of principles to etiology, pathogenesis, and prophylaxis of communicable and non-communicable diseases of domesticated animals.
3 class hours.

Credit, 3.
Professor LENTZ.

89. **I. AVIAN PATHOLOGY.**—For seniors; juniors may elect. This is a lecture course devoted to principles of pathology, with specific application to avian diseases. Etiology, pathogenesis, and prophylaxis will be emphasized.
3 class hours.

Credit, 3.
Professor LENTZ.

Prerequisites, Bacteriology 30 and 51; Physiology 63, 64, and 65.

DIVISION OF SOCIAL SCIENCES.

Professor MACKIMMIE.

Agricultural Economics.

Professor CANCE, Professor LINDSEY, Assistant Professor JEFFERSON, Mr. SMART, Miss FOLEY.

Instruction in agricultural economics is designed to show that the agricultural industry justifies its existence chiefly as a supplier of food and raw textile materials for human consumption; that agricultural success is measured by production of values as well as by production of volume of agricultural products; that the goal of the farmer is the largest net profit over a long-time period; that agricultural production includes all processes from purchase of seed and fertilizer and preparation of seedbed until the product reaches the consumer, including collection, transportation, storage, financing, packing, handling, and selling; that a knowledge of the business of agriculture and agricultural commerce is today more necessary than a knowledge of agricultural technique. The work of this department is conducted by means of lectures, readings, and research in both library and field.

Required Course.

26. **II. AGRICULTURE AND INDUSTRY.**—For sophomores. A course in applied economics. This course should acquaint the student with the variety and magnitude of the agricultural, manufacturing, and other allied industries, their geographic location, economic characteristics, the physical and social reasons for their location and character, their functions, their interrelations, and their importance in our modern economic life.

3 class hours.

Credit, 3.

Professor CANCE and Miss FOLEY.

Elective Courses.

50. **I. ELEMENTS OF PRODUCTION ECONOMICS.**—For juniors; seniors may elect. This course deals with the general industrial relationships of the agricultural industry and the use of land, capital, equipment and labor in the industry, with the various cost and production problems arising therefrom.

3 class hours.

Credit, 3.

Professor CANCE.

51. **II. ADVANCED AGRICULTURAL ECONOMICS.**—For juniors; seniors may elect. Required of students specializing in economics. This course deals with the more difficult problems of the economics of agriculture.

3 class hours.

Credit, 3.

Professor CANCE.

Prerequisite, Agricultural Economics 50.

52. **III. THE FUNDAMENTALS OF CO-OPERATION.**—For juniors; seniors may elect. The history, principles, and business relations of agricultural co-operation. (1) A survey of the development, methods, and economic results of farmers' organizations and great co-operative movements; (2) the business organization of agriculture abroad, and the present aspects and tendencies in the United States; (3) the principles underlying successful co-operative endeavor among farmers, and practical working plans for co-operative associations, with particular reference to purchase of supplies and the marketing of perishable products. Lectures, text, assigned readings, and practical exercises.

3 class hours.

Credit, 3.

Professor CANCE.

53. **II. ELEMENTS OF MARKETING.**—For juniors; seniors and graduate students may elect. A study of the forces and conditions which determine the prices of farm products and the mechanism, methods, and problems concerned with transporting, storing, and distributing them. Supply and demand, course of prices, terminal facilities, the middleman system, speculation in agricultural products, protective legislation, the retail market, and direct sales are taken up. The characteristics and possibilities of the New England market are given special

attention. Lectures, readings, assigned studies, and field work. Class trip to Boston or Springfield for market inspection, at an estimated expense of five to ten dollars.

3 class hours.

Credit, 3.

Professor CANCE.

54. I. ECONOMICS OF CONSUMPTION.—For juniors; seniors and graduate students may elect. The purpose of this course is a consideration of the importance of consumption in modern industry and commerce. It includes a study of the laws of consumption, standards of living, sources and factors determining family incomes, and of the administration of these incomes as shown by the expenditures of the nation and of various groups. The relation of consumption to the problems of population and to the development of society is also studied. Lectures, assigned readings, and class discussions.

3 class hours.

Credit, 3.

Miss FOLEY.

55. III. MARKETING PROBLEMS.—For juniors; seniors may elect. This course is designed for students who have completed Course 53 and is required of students majoring in economics. The course deals with specific problems relating to the distribution of food products.

3 class hours.

Credit, 3.

Professor CANCE.

56. III. THE EVOLUTION OF AGRICULTURE.—For juniors; seniors may elect. A general survey of the evolution of the agricultural industry. Significant developments are traced and their causes and consequences studied. An attempt is made to give the student a knowledge of the changes which have taken place and which are taking place in the agricultural industry, the conditions which accompany these changes, and to furnish a basis by which the significance and the course of present and future developments in agriculture may be judged. Special emphasis will be placed on the development of agriculture in New England and the United States. Lectures, readings, and library work.

3 class hours.

Credit, 3.

Miss FOLEY.

75. II. RURAL AND BUSINESS LAW.—For seniors; juniors may elect. Land, titles, public roads, rights incident to ownership of live stock, contracts, commercial paper, and distinctions between personal and real property. Text, written exercises, lectures, and class discussions.

5 class hours.

Credit, 5.

Mr. SMART.

76. II. PRINCIPLES OF TRANSPORTATION.—For seniors and graduate students; juniors may elect. The development of highway, waterway, and railway transportation, and its relation to the agricultural and industrial development of the country; the principles governing the operation and control of transportation agencies; present-day problems relating to the shipment of farm products, rates, facilities, and services; methods of reducing wastes in transportation; the economics of the good roads movement and of motor transportation. Lectures, text, and field work.

5 class hours.

Credit, 5.

Professor CANCE.

77. I. PROBLEMS IN AGRICULTURAL ECONOMICS.—For seniors and graduate students; juniors may elect. An advanced course for those desirous of studying more intensively some current economic problems. Studies in economic philosophy and the economic aspects and consequences of progress in the physical and biological sciences, current economic questions, agricultural legislation, and government aids and subsidies are some of the problems discussed. Particular attention will be given to economic problems relating to New England. Students will be encouraged to pursue lines of individual interest.

5 class hours.

Credit, 5.

Professor CANCE.

78. **III. AGRICULTURAL CREDIT AND FINANCE.**—For seniors; juniors may elect. The use of credit in the production and marketing of agricultural products; the development, organization, and methods of operation of credit institutions. Methods of improving individual credit and increasing present credit facilities. 3 class hours.

Credit, 3.

Professor LINDSEY.

79. **I. PRINCIPLES AND METHODS OF STATISTICS.**—For seniors and graduate students; juniors may elect. Methods of collecting, analyzing, interpreting, and presenting statistical information. The application of statistical methods to the fields of agriculture, economics, education, business, and industry is emphasized through practical laboratory problems.

2 class hours.

3 2-hour laboratory periods, credit, 5.

Professor LINDSEY.

80. **I.** 81. **II.** 82. **III. SEMINAR.**—For seniors and graduate students. Research in agricultural economics and history; problems of New England agriculture. Library work and reports. If desirable some other topic may be substituted.

1 or 2 2-hour conference periods, credit, 1 or 2.

The DEPARTMENT.

83. **I. ECONOMICS OF SALESMANSHIP.**—For seniors; juniors may elect. The course embraces a study of the principles and practices that are involved in the selling of goods and services. The application of these principles of salesmanship to the disposal of agricultural products is especially emphasized. Types of sales, motives for buying, securing interviews, types of prospects, preparation of sales talks, meeting objections and excuses, and sales demonstrations by students and the instructor are included.

3 class hours.

Credit, 3.

MISS FOLEY.

84. **II. ADVERTISING AGRICULTURAL PRODUCTS.**—For seniors; juniors may elect. A course dealing with the application of the principles of advertising to agricultural products. A study of the nature of advertising, the economics of advertising, the use of media, copy, psychology as applied to advertising layout, the advertising campaign, advertising agency, etc., is made. The solution of practical problems to emphasize different phases of advertising is required of students.

3 class hours.

Credit, 3.

MISS FOLEY.

85. **II. ADVANCED STATISTICS.**—For seniors and graduate students. The use of statistics in the analysis of economic data, with special emphasis on prices; the use of multiple correlation methods in price analysis.

3 2-hour laboratory periods, credit, 3.

Professor LINDSEY.

Prerequisite, Agricultural Economics 79.

86. **III. AGRICULTURAL PRICES.**—For seniors and graduate students. A study of prices of agricultural products and of other commodities of importance to agriculture.

2 or 3 2-hour laboratory periods, credit, 2 or 3.

Professor LINDSEY.

Prerequisite, Agricultural Economics 79.

87. **III. FOREIGN TRADE IN AGRICULTURAL PRODUCTS.**—For seniors and graduates; juniors may elect. A general course embracing a study of the principles and practices of international trade and the foreign commerce of the United States, particularly with reference to agricultural products. The development and present status of foreign trade in agricultural products, trade relations with foreign nations, the agencies and practices of foreign trade, foreign-trade salesmanship and advertising, the status of New England with reference

to foreign trade are some of the topics which will be presented. The work in the course will also include a personal study of special features of foreign trade and of the trade importance of specific subjects. Textbook, class discussion, and class topics. Class trip to Boston at an estimated expense of twelve to fifteen dollars.

3 class hours.

Credit, 3.

The DEPARTMENT.

88. **III. BUSINESS ACCOUNTING.**—For seniors; juniors may elect. Admission by permission of the instructor only. This course aims to give the student an elementary working knowledge of the principles underlying the accounting system in the gathering, analysis, and interpretation of accounting data, and of the methods used in accounting and preparing the usual types of business statements. The managerial uses of accounting as a means of business control are the keynote of the course.

2 class hours.

3 2-hour laboratory periods, credit, 5.

Professor LINDSEY.

Agricultural Education.

Professor WELLES, Professor GLICK, Mr. HEALD.¹

The primary aim of the department is to train students in some form of educational work. The department seeks to be of the greatest possible service to students who are preparing to teach and whose scholastic standing and general qualifications seem to make them suitable candidates for positions. Students desiring state approval as teachers of agriculture or related subjects should confer with the head of the department as early as possible, to insure a desirable range of preparation, including farm experience, a part of which may be gained after entering college. They should also become acquainted with the State Agent for Agricultural Teacher-Training, who approves candidates for positions in special schools and departments of agriculture in high schools. A Teacher-Training certificate will be awarded by the Division of Vocational Education to students who qualify as to farm experience, technical subjects, and educational courses as advised. The department recommends to the State Department of Education such graduates of the college as are qualified to receive the high school teachers' term certificate.

Students who major in other departments but expect to teach should consult this department regarding the educational courses best suited to their purposes.

Elective Courses.

29. **III. PROBLEMS IN AMERICAN EDUCATION.**—For sophomores; juniors and seniors may elect. The aim of this course is to introduce the student to the field of education through the study of the educational problems in the history of America from the beginning of the Colonial period to the present time. Such an understanding is to be desired in order that the citizens of tomorrow may be able to solve their own educational problems to better advantage.

3 class hours.

Credit, 3.

Professor WELLES.

51. **I and II. PRINCIPLES AND METHODS OF TEACHING.**—For juniors; seniors may elect. The course is intended for those students who expect to become teachers. Others must have the consent of the head of the department before registering. The course is based on a good text in the general principles of teaching. School management is taught through "case studies" which may serve also to illustrate methods. Current educational literature relating to methods, certain books and assigned topics are required for reading and reports. A few teaching exercises are required in the class for illustration. By preference Course 55 should precede this.

3 class hours.

Credit, 3.

Professor WELLES.

¹ State Agent for Agricultural Teacher-Training representing the State Department of Education in the administration of vocational education acts.

52. **I. HISTORY OF ANCIENT AND MEDIEVAL PHILOSOPHY.**—For juniors and seniors. A study of philosophy as it began with the Greeks and continued under the influence of the Church during the Middle Ages. This gives a background for the fuller understanding of current problems in religion, education, etc.

Credit, 3.

Professor GLICK.

55. **I and II. GENERAL PSYCHOLOGY.**—For juniors; seniors and graduate students may elect. This is an introductory course for those anticipating further study in psychology, as well as a practical and cultural course for those who can take only one course in this field. It deals with the fundamental principles of psychology and their application to the understanding and control of human thought and action.

3 class hours.

Credit, 3.

Professor GLICK.

56. **II and III. EDUCATIONAL PSYCHOLOGY.**—For juniors; seniors and graduate students may elect. A direct application of psychology to the field of education, and a basic course for both general and specific methods. The course deals with the original nature of the child, the psychology of learning, individual differences, transfer of training, mental tests, etc. Intended primarily for prospective teachers, but open to others who are sufficiently interested.

3 class hours.

Credit, 3.

Professor GLICK.

Prerequisite, Agricultural Education 55 or consent of the instructor.

65. **III. EXPERIMENTAL PSYCHOLOGY.**—For juniors; seniors may elect. This course is for students majoring in Education or those major students from other departments who definitely expect to teach. The course covers lectures, assigned reading and laboratory experimentation.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor GLICK.

Prerequisite, Agricultural Education 55 or equivalent.

75. **III. PRINCIPLES OF SECONDARY EDUCATION.**—For seniors; juniors may elect. This is a study of the American high school. It is designed to acquaint the student with the aims of high school education, the characteristics and tendencies of high school students, the high school curriculum, extra-curricular activities, and the best ideas in regard to the administration of high schools.

3 class hours.

Credit, 3.

Professor Welles.

76. **I and II. VOCATIONAL AGRICULTURAL TEACHING.**—For juniors; seniors and graduate students may elect with permission of the head of the department. The course demands certain prerequisites of experience and objective which make permission necessary. It is the first of the series (76, 78, 82) and gives an introduction to the work of teaching agriculture in secondary schools, with essential information and observation preparatory to apprenticeship before the second term of the senior year.

3 class hours.

Credit, 3.

Professor WELLES and VOCATIONAL DIVISION
OF STATE DEPARTMENT OF EDUCATION.

77. **III. METHODS IN EXTENSION TEACHING.**—For seniors; juniors and others qualified may elect. Candidates must consult the head of the department before registering. The course deals with various phases of extension work and the methods by which this work is accomplished. The specific lines are those of the county agent, boys' and girls' club leader, county demonstration agent, and agricultural specialist. The different phases of the work will be discussed by members of the Extension staff who are specialists in their particular lines. The course will be offered jointly by the Extension Service and the Department of Agricultural Education.

3 class hours.

Credit, 3.

Professor WELLES and EXTENSION SERVICE STAFF.

78. **I, II, and III. APPRENTICE TEACHING.**—For juniors or seniors by arrangement with the head of the department. Under certain conditions a student may be absent from college one term of his junior or senior year for apprentice teaching, depending upon the availability of an apprentice opening, and satisfaction of the other conditions. This is part of the required preparation leading to the Special Certificate for Teachers of Agriculture and is a substitute for Course 80 in these cases. It should be completed before the winter term of the senior year.

Credit, 5.

Professor WELLES and VOCATIONAL DIVISION
OF STATE DEPARTMENT OF EDUCATION.

79. **III. TESTS AND MEASUREMENTS.**—Limited to fifteen seniors majoring in the department. A study of the development, theory, and construction of the various types of tests and measurements, with special emphasis upon their use in the schools. Practice is given in the administration and scoring of tests. Modern statistical methods are applied to the interpretation of the results.

2 class hours. 1 2-hour conference period, credit, 3.

Professor GLICK.

80. **I, II, and III. SUPERVISED TEACHING.**—For seniors; others qualified may be permitted to elect. No student will be enrolled for the course except by arrangement with the head of the department. Some opportunities for limited practice are available. A limited amount of study of teaching by observing is permitted. Special professional reading, assigned and optional, is required. A conference is required each week for reporting on the work each is doing and for general discussion. The amount of credit depends upon the amount and character of the work. A thesis covering all work in the course during the term is required.

1 class hour.

2 to 10 laboratory hours, credit, 1-5.

Professor WELLES.

Prerequisite, Agricultural Education 51 and 55 or equivalents.

81. **III. SEMINAR IN METHODS OF TEACHING.**—For seniors and graduate students by arrangement with the instructor. This is an opportunity to become acquainted with the outstanding methods in use in public schools and pursue further special method studies other than agriculture as provided in Course 76.

2 class hours.

Credit, 2.

Professor WELLES.

Prerequisites, Agricultural Education 51 and 56 or equivalents.

82. **II. THE TECHNIQUE OF TEACHING AGRICULTURE.**—For seniors and graduate students by arrangement with the head of the department; juniors in exceptional instances. This course follows Courses 76 and 78. While these are not absolute prerequisites, it will be an exceptional case in which any other order is permitted. This course covers the material, methods, policies, and special requirements of the state for agricultural teaching.

3 class hours.

Credit, 3.

Professor WELLES and VOCATIONAL DIVISION
OF STATE DEPARTMENT OF EDUCATION.

83. **III. SEMINAR IN APPLIED PSYCHOLOGY.**—For seniors and graduate students. Intended for those who desire to study the application of psychology in special fields, such as salesmanship, advertising, medicine, law, public office, extension work, education, business, etc.

2 class hours.

Credit, 2.

Professor GLICK.

Prerequisites, Agricultural Education 55 and 56 or 85.

85. **I. VOCATIONAL PSYCHOLOGY.**—For seniors and graduate students. An application of psychology to the various fields of thought and action other than education.

3 class hours.

Credit, 3.

Professor GLICK.

Prerequisite, Agricultural Education 55 or consent of the instructor.

87. **II. HISTORY OF MODERN PHILOSOPHY.**—For juniors and seniors. A continuation of Course 52, tracing the developments of philosophy both from the standpoint of content and method during the modern period.
3 class hours.

Credit, 3.
Professor GLICK.

95. **III. CURRENT TYPES OF PHILOSOPHY.**—For seniors and graduate students; juniors may elect. A critical study of present-day types of philosophy including naturalism, scepticism, agnosticism, pragmatism, intuitionism, dualism, idealism, realism, mysticism, materialism, and behaviorism.
3 class hours.

Credit, 3.
Professor GLICK.

Economics, History, and Sociology.

Professor MACKIMMIE, Assistant Professor CUTLER, Assistant Professor JEFFERSON, Mr. WILLIAMS.

The courses in economics and history are planned with the purpose of giving the student that knowledge and understanding of the important factors and problems in this field of study and life which every active citizen and educated man ought to have.

The courses in sociology, in addition, help equip a student for service as county agent, as agricultural or industrial or social economist, as family or children's or boy's club or medical or prison or psychiatric social worker, and as teacher, especially of social science in high schools.

ECONOMICS.

Required Course.

25. **I. ECONOMIC PRINCIPLES.**—For sophomores. Definitions of economic terms, such as wealth, capital, value, etc.; factors of production, exchange, and consumption; principles of economic production, supply and demand, diminishing returns, division of labor, productive organization; principles of exchange, theories of value, money and its problems; international trade, tariff and free trade theories; forms of income, wages, interest, rent, profits, and the forces which govern them; principles of spending, economy, luxury; principles and agencies for saving, investments, banks, building associations, insurance. Text-book and readings.

3 class hours.

Credit, 3.
Professor MACKIMMIE.

Elective Courses.

51. **II. BUSINESS AND INDUSTRY.**—For juniors and seniors. The forms, organization, administration, and labor problems of business. Methods of organizing, financing, and administering corporations and partnerships; forms of business administration, wholesaling, jobbing, retailing, advertising, credits and collections; system of industrial remuneration for wage earners, co-operation and preserving industrial peace; problems concerned with protective legislation for workmen and employers, sweated industries, prison labor, child labor, and industrial education.

5 class hours.

Credit, 5.
Professor MACKIMMIE.

Prerequisite, Economics 25.

52. **III. PUBLIC FINANCE, TAXATION, MONEY AND BANKING.**—For juniors and seniors. Systems and problems of taxation as they are found in Europe and America; objects for spending public revenue; public debts and methods of organizing them; systems of money and currency problems of America; types, methods, and functions of banks; economic and financial crises and depressions in the United States; modern war finance. Readings and lectures.

5 class hours.

Credit, 5.
Professor MACKIMMIE.

Prerequisite, Economics 25.

HISTORY.

Required Course.

30. **III. AMERICAN HISTORY.**—For sophomores. The rise and development of the United States, with special stress upon the origin of present conditions. Lectures and readings.

3 class hours.

Credit, 3.

Assistant Professor CUTLER.

Elective Courses.

25. **II. AMERICAN GOVERNMENT.**—For sophomores; juniors and seniors may elect. A study of the structure and operation of the machinery of our government; also a study of the history of its development from its inception to the present day.

3 class hours.

Credit, 3.

Assistant Professor CUTLER.

28. **I. ECONOMIC HISTORY OF THE UNITED STATES.**—For sophomores; juniors and seniors may elect. A study of the factors and forces which have affected the economic development of the United States. Special attention is focused on the working out of economic principles, and on the interaction between the economic, social, and political conditions and institutions. Text, lectures, and prepared discussions.

3 class hours.

Credit, 3.

Assistant Professor JEFFERSON.

29. **II. ENGLISH HISTORY.**—For sophomores; juniors and seniors may elect. A study of the political, social, and religious movements in England, with special reference to an understanding of English literature.

3 class hours.

Credit, 3.

Professor MACKIMMIE.

50. **I. GOVERNMENT.**—For juniors and seniors. Forms and working methods of the government of Great Britain, Germany, France, Russia, Switzerland, New Zealand, and Canada; historic types and theories of government; forms and methods of Federal, State, and local governments in America; progress and problems of democracy, and new reform movements in organization and administration; new tendencies towards social legislation and extension of governmental control.

3 class hours.

Credit, 3.

Professor MACKIMMIE.

51. **II. MODERN EUROPEAN HISTORY.**—For juniors and seniors. The modern history of the principal countries of Europe, especially the great movements and revolutions that developed the nations up to the present generation.

3 class hours.

Credit, 3.

Professor MACKIMMIE.

52. **III. EUROPEAN HISTORY SINCE 1870.**—For juniors and seniors. The Franco-Prussian War and the formation of the German Empire; the unification of Italy; the Third French Republic; European expansion in the East; the Russo-Japanese War; and the origin, events, and results of the War of 1914. While a continuation of Course 51, this course will be complete in itself and may be elected by those who have had no history training. Its aim is to provide the basis for an understanding of present-day conditions and for an intelligent participation in world affairs.

3 class hours.

Credit, 3.

Professor MACKIMMIE.

55. **II. THE HISTORY OF RELIGIONS.**—For juniors; seniors may elect. This course will consist of a rapid survey of primitive religions, and of the religions of India, China, and Greece. Its aim will be to acquaint the student with the historical facts concerning these religions and also to give him an

understanding of the spirit and the needs which prompted their use. Consideration will be given to the application of the material of the course to current religious problems. The elements of similarity between these religions and the Christian religion will also be discussed.

3 class hours.

Credit, 3.

MR. WILLIAMS.

56. **III. THE PROBLEMS OF RELIGION.**—For juniors; seniors may elect. Admission by permission of instructor. The field of this course is that of the philosophy of religion. However, no attempt will be made to cover all the problems of this discipline. Only those problems will be discussed which the students electing the course desire to have discussed. Any current religious problem will be considered within the scope of the course. The method pursued will be that of the seminar.

3 class hours.

Credit, 3.

MR. WILLIAMS.

Prerequisite, History 55.

SOCIOLOGY.

Elective Courses.

27. **I. ELEMENTS OF SOCIOLOGY.**—For sophomores; juniors and seniors may elect. A study of the individual considered as a member of his various groups; the group fallacy; the conditioned reflex; emotion; personality; social behavior; social stimulation; the group and the crowd; social attitudes, ideals, and adjustments; influence of environment; rural life; field and viewpoint of scientific sociology. Lectures and readings.

3 class hours.

Credit, 3.

Assistant Professor CUTLER.

50. **I. 51. II. 52. III. SOCIOLOGICAL LAWS AND THEIR APPLICATION.**—For juniors; seniors may elect. A study of the scientific principles which characterize the relation of the individual to his various groups—the family, the school, the club, recreational institutions, the church, business, the government, and others. Practical application. This study is especially directed toward rural phases of the subject. Lectures, readings, field work, discussions, and topical reports. These courses are sequential, but may be elected independently; together with Course 27, they constitute the basic series in sociology.

3 class hours.

Credit, 3.

Assistant Professor CUTLER.

Prerequisite, Sociology 27, or the consent of the instructor.

54. **II. HISTORICAL SOCIOLOGY.**—For juniors; seniors may elect. Characteristics of primitive man, departure from the animal status and beginnings of civilization; origin and development of industries, arts, and sciences, including agriculture; the evolution of languages, warfare, migrations, and social institutions; a study of the powerful natural and human forces that have brought man from the early stages to modern development; characteristic features of the leading civilizations and races of ancient and modern times; beneficial and dangerous factors in American life.

5 class hours.

Credit, 5.

Assistant Professor CUTLER.

Prerequisite, Sociology 27.

75. **I. PROBLEMS OF SOCIAL REFORM.**—For seniors; juniors by permission. Such current problems as eugenics, race suicide, divorce, crime and delinquent classes, prison reform, prevention and treatment of dependents and defectives, poverty, its causes and preventions; constructive modern social reform movements for insurance of wage earners, farm relief, protection of childhood, assurance of safety, health, and play time for all classes. The correctional and charitable institutions of Massachusetts are studied in considerable detail.

5 class hours.

Credit, 5.

Assistant Professor CUTLER.

Prerequisites, Sociology 50, 51, and 52, or the consent of the instructor.

76. **I. FIELD WORK IN SOCIOLOGY.**—For seniors; juniors may elect. Designed to meet the needs of students who wish to do some constructive work in social service while still in college. The work is carried on in co-operation with the various college agencies engaged in rural service. Any project for which credit in this course is to be asked must first have the approval of the head of the department.

2 to 6 laboratory hours, credit, 1 to 3.

Assistant Professor CUTLER.

Prerequisites, Sociology 27, or 50, 51, and 52.

77. **III. SOCIOLOGICAL RESEARCH.**—For seniors; juniors may elect. Research methods—measurements, exploration, criticism, surveys; a careful study of the scientific method as applied to social problems; the technique of investigation and research; the procedure of gathering sociological data by means of the survey; the interpretation and graphic presentation of social facts. Text, lectures, field and laboratory work.

3 class hours.

Credit, 3.

Prerequisites, Sociology 50, 51, and 52, or the consent of the instructor.

Assistant Professor CUTLER.

79. **I. 80. II. 81. III. SEMINAR.**—Enrolment is open to graduate students, and seniors majoring in social science who are especially prepared. Topics recently studied are: modern economic theory; sociology of American colonies in the Caribbean region; success in rural leadership; rural sociology of the Old World and Far East; the standard of living in American rural life; proposed improvements in rural local government; international agricultural problems; the art of straight thinking. Courses are sequential but may be elected independently.

2 class hours.

Credit, 2.

Professors MACKIMMIE and CUTLER.

Languages and Literatures.

Professor PATTERSON, Professor JULIAN, Associate Professor PRINCE, Associate Professor RAND, Assistant Professor GÖDING, Mr. BARNARD, Mr. ELLERT, Mr. STOFFLET, Mr. TROY.

The courses in English are intended to enable students to express themselves effectively and to appreciate the ideals of English-speaking people throughout their history.

The aim of the courses in French, Spanish, and German is to give the student a practical knowledge of these languages for the purpose of wider reading and research, to introduce him to some of their treasures in art and science, and through the literature to acquaint him with the people.

The courses in History and Interpretation of Music are non-technical in treatment and are intended for those who wish a background of the history of music and its interpretation.

ENGLISH.

Required Courses.

1. **I. 2. II. 3. III. ENGLISH.**—For freshmen. Composition. Intended to teach straight thinking, sound structure, clear and correct expression. Lectures, recitations, theme writing, and conferences.

3 class hours.

Credit, 3.

Associate Professors PRINCE and RAND, Mr. BARNARD, and Mr. TROY.

25. **I. 26. II. 27. III. ENGLISH.**—For sophomores. A general reading course in English literature.

2 class hours.

Credit, 2.

Professor PATTERSON.

28. **I. 29. II. 30. III. ENGLISH.**—For sophomores. Public speaking.

1 class hour.

Credit, 1.

Associate Professors PRINCE and RAND, Mr. BARNARD, and Mr. TROY.

Elective Courses.

50. **III. ENGLISH POETRY AND THE ROMANTIC MOVEMENT (1931-32).**— Alternates with Course 67. For juniors and seniors. A study chiefly in the beginning of Romanticism in English Poetry as found in the work of Collins, Gray, Burns, and Blake, with considerable attention to the culmination of Romanticism in the poetry of Shelley.

3 class hours.

Credit, 3.

Associate Professor PRINCE.

51. **II. ENGLISH POETRY OF THE NINETEENTH CENTURY (1932-33).**— Alternates with Course 54. For juniors and seniors. Especial attention is given to Landor, Tennyson, Arnold, and Clough.

3 class hours.

Credit, 3.

Professor PATTERSON.

52. **II. ENGLISH WRITERS FROM MILTON TO POPE.**— For juniors and seniors. Some of the writers studied are Milton, Dryden, and Pope.

3 class hours.

Credit, 3.

Professor PATTERSON.

53. **II. ENGLISH PROSE OF THE EIGHTEENTH CENTURY.**— For juniors and seniors. A brief exposition of the thinking of the period, in philosophy, government, and criticism is followed by a study of essayists and letter writers from Defoe to Godwin.

3 class hours.

Credit, 3.

Associate Professor PRINCE.

54. **II. ENGLISH PROSE IN THE EARLY NINETEENTH CENTURY (1931-32).**— Alternates with Course 51. For juniors and seniors. Coleridge, Lamb, DeQuincey, Hazlitt, Macaulay.

3 class hours.

Credit, 3.

Professor PATTERSON.

55. **II. AMERICAN PROSE.**— For juniors and seniors. A course in the chief American prose writers, among those studied being Franklin, Brockden Brown, Irving, Cooper, Poe, Melville, Hawthorne, Emerson, Thoreau, Parkman.

3 class hours.

Credit, 3.

Associate Professor PRINCE.

56. **III. AMERICAN POETRY.**— For juniors and seniors. A course in the chief American poets, among those studied being Freneau, Bryant, Poe, Emerson, Longfellow, Whittier, Lowell, Whitman, Lanier.

3 class hours.

Credit, 3.

Associate Professor PRINCE.

57. **III. BROWNING AND THE PRE-RAPHAELITES.**— For juniors and seniors. The course will be devoted especially to Browning and Swinburne, with some attention to Dante Gabriel Rossetti and William Morris.

3 class hours.

Credit, 3.

Professor PATTERSON.

58. **III. ENGLISH PROSE OF THE VICTORIAN AGE.**— For juniors and seniors. The essayists will be considered, especially Carlyle, Ruskin, Newman, Arnold, Pater, and Stevenson.

3 class hours.

Credit, 3.

Mr. BARNARD.

60. **I. BYRON AND KEATS.**— For juniors and seniors.

3 class hours.

Credit, 3.

Professor PATTERSON.

61. **II. CHAUCER.**— For juniors and seniors. Reading of the principal works of Chaucer; a study of Chaucer's development as a creative artist; an attempt to appreciate his humanism.

3 class hours.

Credit, 3.

Associate Professor PRINCE.

63. **III. SHAKESPEARE.**—For juniors and seniors. Three or four representative plays will be studied as closely as possible.

3 class hours.

Credit, 3.

Professor PATTERSON.

64. **I. THE LAKE POETS (1932-33).**—Alternates with Course 68. For juniors and seniors. A study of the background, the theories and the poetry of the Lake Poets, the leaders of whom were Wordsworth and Coleridge.

3 class hours.

Credit, 3.

Associate Professor RAND.

65. **I. ADVANCED COMPOSITION.**—For juniors and seniors. Advanced work in expository writing, based upon specimens by contemporary authors and upon the personal experience of the student. Particular attention is given to certain elements of style.

3 class hours.

Credit, 3.

Associate Professor RAND.

66. **II. THESES.**—For juniors and seniors. This is a course in library research, each student making a considerable investigation of a subject of his own selection. An orderly accumulation of material is followed by an intelligent and readable interpretation of its significance.

3 class hours.

Credit, 3.

Associate Professor RAND.

67. **III. NARRATIVE WRITING (1932-33).**—Alternates with Course 50. For juniors and seniors. Fictional narrative and its art deduced from the study of a few of the great English and Continental masterpieces of fiction.

3 class hours.

Credit, 3.

Associate Professor PRINCE.

68. **I. THE TUDOR POETS (1931-32).**—Alternates with Course 64. For juniors and seniors. A study of the non-dramatic poetry of the Tudor period, culminating in the work of Spenser, the Elizabethan lyricists, and the King James translators of the Bible.

3 class hours.

Credit, 3.

Associate Professor RAND.

71. **I. ELIZABETHAN DRAMATISTS.**—For juniors and seniors. A study of the types of Elizabethan drama, exclusive of Shakespeare, with special consideration of the plays of such men as Lyly, Peele, Greene, Kyd, Marlowe, Jonson, Beaumont, Fletcher, Webster, Massinger.

3 class hours.

Credit, 3.

Associate Professor PRINCE.

75. **I. THE NOVEL.**—For juniors and seniors. A rapid survey of the beginnings of the novel will be followed by a somewhat careful study of its types and development as revealed in such works as Tom Jones, Vicar of Wakefield, Pride and Prejudice, Ivanhoe, David Copperfield, Vanity Fair, Adam Bede, Kidnapped, Tess of the D'Urbervilles, Esther Waters, Rise of Silas Lap-
ham, House of Mirth, Main Street.

3 class hours.

Credit, 3.

Professor PATTERSON.

79. **II. SHAKESPEARE.**—For juniors and seniors. This course is based upon the careful reading of about twenty of Shakespeare's plays, selected to indicate the evolution of the dramatist and to emphasize the various phases of his art.

3 class hours.

Credit, 3.

Associate Professor RAND.

80. **III. MODERN DRAMA (1932-33).**—Alternates with Course 81. For juniors and seniors. This course will trace the development of English drama

from the time of Ibsen to the present day. The purpose of the course is to impart an intelligent and sympathetic interest in the theatre of the twentieth century.

3 class hours.

Credit, 3.

Associate Professor RAND.

81. **III. MODERN POETRY (1931-32).**— Alternates with Course 80. For juniors and seniors. This course attempts to trace the spirit of Twentieth Century poetry from such authors as Hardy, Whitman, and Emily Dickinson to those of the present day. About fifteen Twentieth Century poets are studied in this course, particular attention being given to the influence of Whitman and Emily Dickinson. The student is required to memorize a number of lyrics.

3 class hours.

Credit, 3.

Associate Professor RAND.

PUBLIC SPEAKING.

Elective Courses.

50. **I. ARGUMENTATION (1932-33).**— Alternates with Course 52. For juniors and seniors. Presents the fundamental principles of argumentation as applied to oral and written discourse, and develops in the student power to handle argument convincingly and persuasively. Lectures, discussions of leading questions of the day, practice in brief-drawing and the writing of forensics. The course is recommended for those who desire to enter the intercollegiate debates.

3 class hours.

Credit, 3.

Associate Professor PRINCE.

51. **III. OCCASIONAL ORATORY.**— For juniors and seniors. A study of the principles and the practice of formal oratory; the preparation and delivery of one original oration; prescribed reading in oratory. The course is recommended for those who wish to enter the Flint Contest.

3 class hours.

Credit, 3.

Associate Professor PRINCE.

52. **I. EXTEMPORE SPEAKING (1931-32).**— Alternates with Course 50. For juniors and seniors. The course is intended to give the student practice in thinking upon his feet and in presenting cogently his thinking to a public group.

3 class hours.

Credit, 3.

Associate Professor PRINCE.

FRENCH.

Elective Courses.

1. **I.** 2. **II.** 3. **III. ELEMENTARY FRENCH.**— For freshmen; sophomores, juniors, and seniors may elect. The essentials of grammar are rapidly taught and will be accompanied by as much reading as possible.

3 class hours.

Credit, 3.

Assistant Professor GODING.

4. **I.** 5. **II.** 6. **III. INTERMEDIATE FRENCH.**— For freshmen; sophomores, juniors, and seniors may elect. Training for rapid reading. The reading of a number of short stories, novels, and plays; composition, reports on collateral reading from periodicals and scientific texts in the library.

3 class hours.

Credit, 3.

Assistant Professor GODING and Mr. STOFFLET.

Prerequisites, French 1, 2, and 3, or Entrance French.

25. **I.** 26. **II.** 27. **III. INTERMEDIATE FRENCH.**— For sophomores; juniors and seniors may elect. Training for rapid reading. The reading of a

Part II.

number of short stories, novels, and plays; readings from periodicals and scientific texts in the library.

3 class hours.

Credit, 3.

Mr. STOFFLET.

Prerequisites, French 1, 2, and 3.

28. I. 29. II. 30. III. **ADVANCED FRENCH.**—For sophomores; juniors and seniors may elect. A general survey of the history of French literature and the development of French culture, with representative works of the important periods. Lectures. Outside readings.

3 class hours.

Credit, 3.

Assistant Professor GODING.

Prerequisites, French 4, 5, and 6, or 25, 26, and 27.

50. I. **FRENCH LITERATURE.**—For juniors and seniors. A detailed study of the Romantic period. Readings from Hugo, de Vigny, Lamartine, de Musset, and others. Influence of French, German, and Italian literature is stressed. Lectures and outside readings.

3 class hours.

Credit, 3.

Assistant Professor GODING.

Prerequisites, French 4, 5, and 6, or 25, 26, and 27.

51. II. **FRENCH LITERATURE.**—For juniors and seniors. A detailed study of the Realistic period. Readings from Balzac, Flaubert, Stendhal, and others. Lectures, outside readings.

3 class hours.

Credit, 3.

Assistant Professor GODING.

Prerequisites, French 4, 5, and 6, or 25, 26, and 27.

52. III. **FRENCH LITERATURE.**—For juniors and seniors. Later nineteenth century and modern French literature. Readings from Rostand, Loti, Daudet, Anatole France, and others. Discussions of contemporary authors. Modern criticism.

3 class hours.

Credit, 3.

Assistant Professor GODING.

Prerequisites, French 4, 5, and 6, or 25, 26, and 27.

75. I. 76. II. 77. III. **FRENCH LITERATURE.**—For seniors; juniors may elect. Survey of the Classical period, with readings from representative works.

3 class hours.

Credit, 3.

Mr. STOFFLET.

Prerequisites, French 4, 5, and 6, or 25, 26, and 27.

81. III. **METHODS OF TEACHING FRENCH.**—For seniors; juniors may elect with the consent of the instructor. This course is designed to meet the needs of students intending to teach French and those desiring a more accurate knowledge of the French language. The elements of pronunciation will be studied scientifically and from the standpoint of the teacher. There will be a rapid but thorough review of grammar which will be followed by a discussion on textbooks and reading materials. Given in alternate years.

3 class hours.

Credit, 3.

Assistant Professor GODING.

Prerequisites, French 4, 5, and 6, or 25, 26, and 27, and, in addition, one year of advanced French.

SPANISH.

Elective Courses.

50. I. 51. II. 52. III. **ELEMENTARY SPANISH.**—For juniors and seniors; open to other students upon arrangement. Grammar, exercises in composition and conversation, reading of selected short stories.

3 class hours.

Credit, 3.

Mr. STOFFLET.

75. I. 76. II. 77. III. MODERN SPANISH AUTHORS.—For seniors. Reading from modern Spanish novel and drama; composition; outside reading. 3 class hours. Credit, 3.

Mr. STOFFLET.

Prerequisite, Spanish 52.

MUSIC.

Elective Courses.

50. I. HISTORY AND INTERPRETATION OF MUSIC.—For juniors and seniors. The Classical School. Works of Bach, Handel, Haydn, and Mozart are performed and studied. Lectures, musical illustrations, and outside readings. 3 scheduled hours. Credit, 2.

Assistant Professor GODING.

51. II. HISTORY AND INTERPRETATION OF MUSIC.—For juniors and seniors. A continuation of Course 50. The Romantic School—Beethoven, Schubert, Weber, Mendelssohn, Schumann, Chopin, Berlioz, Liszt. 3 scheduled hours. Credit, 2.

Assistant Professor GODING.

52. III. HISTORY AND INTERPRETATION OF MUSIC.—For juniors and seniors. The Italian, French, and German schools of opera; modern and contemporary composers. 3 scheduled hours. Credit, 2.

Assistant Professor GODING.

75. I. 76. II. 77. III. ENSEMBLE MUSIC.—For juniors and seniors. This course will include lectures on history of development of the orchestra and orchestral music, choral music, and band, theory and practice in harmony, arrangement and transposition of various numbers for the use of orchestra, chorus, and band. It is designed to give fundamental instruction that should be of direct value to the student for enjoyment and performance of musical compositions. All students registering for the course are expected to belong to the orchestra, chorus, or band. Course 75 is prerequisite to Course 76, and Course 76 to Course 77. 3 scheduled hours. Credit, 2.

Assistant Professors GODING and CUBBON.

GERMAN.

Elective Courses.

1. I. 2. II. 3. III. ELEMENTARY GERMAN.—For freshmen; sophomores, juniors, and seniors may elect. Grammar, reading, and prose composition. Special emphasis is placed on the acquirement of a fundamental stem vocabulary and the ability to understand simple German paragraphs in German. 3 class hours. Credit, 3.

Professor JULIAN and Mr. ELLERT.

4. I. 5. II. 6. III. INTERMEDIATE GERMAN.—For freshmen; sophomores, juniors, and seniors may elect. Reading and study of some important literary productions in the field of the novel and the drama. 3 class hours. Credit, 3.

Mr. ELLERT.

Prerequisites, German 1, 2, and 3, or Entrance German.

25. I. 26. II. 27. III. INTERMEDIATE GERMAN.—For sophomores; juniors and seniors may elect. The German short story; grammar review and advanced prose composition. 3 class hours. Credit, 3.

Mr. ELLERT.

Prerequisites, German 1, 2, and 3.

28. I. 29. II. 30. III. ADVANCED GERMAN. — For sophomores; juniors and seniors may elect. Goethe's Faust.
3 class hours. Credit, 3.
Professor JULIAN.

Prerequisites, German 4, 5, and 6, or 25, 26, and 27.

50. I. 51. II. 52. III. SCIENTIFIC GERMAN. — For juniors and seniors. Intensive and specialized reading of literature in standard German scientific journals and reference books.
3 class hours. Credit, 3.
Professor JULIAN.

Prerequisites, German 4, 5, and 6, or 25, 26, and 27.

75. I. 76. II. 77. III. GERMAN LITERATURE. — For seniors. Advanced language and literary study, conducted entirely in German. Lectures on German literature and history; collateral readings, including masterpieces of different epochs, such as *Niebelungenlied*, and some typical modern drama.
3 class hours. Credit, 3.
Professor JULIAN.

Prerequisites, German 28, 29, and 30.

GENERAL DEPARTMENTS.

Military Science and Tactics.

Colonel CHARLES A. ROMEYN, Cav. (D. O. L.), U. S. A.; Captain EDWIN M. SUMNER, Cav. (D. O. L.), U. S. A.; Captain DWIGHT HUGHES, Jr., Cav. (D. O. L.), U. S. A.; Technical Sergeant JONATHAN MADDEN, U. S. A., Retired; Technical Sergeant JAMES A. WARREN, Cav. (D. E. M. L.), U. S. A.; Sergeant FRANK CRONK, Cav. (D. E. M. L.), U. S. A.; and a detachment of enlisted men of the United States Army.

Under act of Congress, July 2, 1862, the College was required to provide a two-year course in military instruction under a regular army officer. All able-bodied four-year male students are required to take this course. Under act of Congress, June 3, 1916, as amended by act of Congress, September 8, 1916, there was established at this college in April, 1917, an infantry unit of the Reserve Officers' Training Corps. Following the World War and an act of Congress, July 19, 1918, the Reserve Officers' Training Corps has been in operation under the regulation of the War Department, administered by the president of the college and the professor of military science and tactics. Beginning with the fall term, 1920-21, the infantry unit of the Reserve Officers' Training Corps was converted into a cavalry unit.

The primary object of the Reserve Officers' Training Corps is to provide systematic military training at civil educational institutions, for the ultimate purpose of qualifying selected students of such institutions as reserve officers in the military forces of the United States. It is intended to attain this object during the time the students are pursuing their general or professional studies, with the least practicable interference with their civil careers, by employing methods designed to fit men physically, mentally, and morally for pursuits of peace as well as war.

The course for cavalry units of the Reserve Officers' Training Corps includes theoretical and practical instruction in all phases of cavalry work, so distributed over the four-year college course as to qualify students at the end of the freshman year as privates of cavalry, at the end of the sophomore year as non-commissioned officers of cavalry, and upon graduation as reserve officers. The instruction in this department covers cavalry drill, cavalry weapons — rifle, pistol, saber, machine rifle, and machine gun — map reading and military sketching, minor tactics, equitation, etc. The course in equitation includes cross-country riding and jumping. Forty per cent of the course is classroom work. All practical instruction is out of doors.

All male candidates for a degree in the four-year course must take at least three hours a week of military training for two years. Students who are approved by the president and the professor of military science and tactics may take the advanced course in their junior and senior years if they so elect. The advanced course consists of at least five hours per week and a summer camp of about six weeks during the summer vacation between the junior and senior years. Students

taking this course are paid by the Federal Government at a rate to be fixed by the Secretary of War, not to exceed the value of the army ration. The rate now fixed is thirty cents per day, which, with all allowances, amounts to about two hundred and thirty-five dollars. Students graduating in the advanced course are eligible for commissions in the Officers' Reserve Corps, but are not required to accept such commissions if offered.

The uniform furnished to the freshmen and sophomores (basic course) is a very presentable one of olive drab woolen cloth, and is supplied by the Federal Government without cost except for the necessary alterations. The uniforms for the juniors and seniors (advanced course) are similar to U. S. army officers' uniforms, tailor-made for the individual student. A deposit of thirty dollars for this uniform is required at the beginning of the junior year. The student is reimbursed through the allowances for clothing and rations.

Required Courses.

1. **I.** 2. **II.** 3. **III.** For freshmen. Theoretical and practical instruction in courtesy and discipline, rifle marksmanship, hygiene and first aid, dismounted drill, and musketry.

3 scheduled hours, credit, 2.
ARMY INSTRUCTORS.

25. **I.** 26. **II.** 27. **III.** For sophomores. Theoretical and practical instruction in leadership, riding, drill, saber, machine rifle and pistol, and employment of cavalry.

3 scheduled hours, credit, 2.
ARMY INSTRUCTORS.

Elective Courses.

50. **I.** 51. **II.** 52. **III.** For juniors. Cavalry drill and riding, selection and care of horses, pistol marksmanship, machine guns, map reading, map making, jumping, and employment of cavalry.

5 scheduled hours, credit, 3.
ARMY INSTRUCTORS.

75. **I.** 76. **II.** 77. **III.** For seniors. Military law, history, correspondence and records, engineering (bridges and explosives), cavalry drill, leadership and command, riding, mounted sports, competitions, horse-show preparation and management, cross-country riding, and employment of cavalry.

5 scheduled hours, credit, 3.
ARMY INSTRUCTORS.

Physical Education and Hygiene.

Professor HICKS, Professor GORE, Professor RADCLIFFE, Mrs. HICKS, Assistant Professor DERY, Assistant Professor TAUBE, Mr. BALL, Mr. BRIGGS, Mr. ROGERS.

The purpose of the laboratory courses offered by this department is to provide active exercise regularly, in order that all students may properly care for their health and maintain their physical condition throughout their college course. It is also hoped that the health and exercise habits thus established will be continued after leaving college. The course in Hygiene is a series of lectures designed to give to the new student the simple rules of living both as an individual and in his relations with others. The required courses for men and for women are supplemented by special lectures on social hygiene and social relations. The elective courses for men are offered for those students who are preparing to teach. The majority of our graduates who enter the teaching profession in either the public or private schools are expected to do some physical education or athletic work either as coaches or administrators.

[All undergraduate students are given a physical examination upon entering. All undergraduate women students are also required to present as a part of their entrance record, a form report of a physical examination by their family physician.]

MEN.*Required Courses.*

1. **I. HYGIENE.**—For freshmen. Lectures on personal hygiene, including the physiological basis for sound health habits, the importance of the systematic planning of a student's daily program in order to provide the proper amounts of time for study, with suitable periods of sleep, relaxation, recreation, and sports; posture, appropriate types of exercise, proper nutrition, social adjustment, the necessity for frequent medical, optical, and dental advice; sanitation and group health requirements.

1 class hour.

Credit, 1.

Professor RADCLIFFE.

2. **I. PHYSICAL EDUCATION ACTIVITY. RECREATION.**—For freshmen. Outdoor games in the regular classwork include soccer, forward pass drive, kick football, swimming, and miscellaneous games using their respective skills; a physical achievement test consisting of track and field events is given. Men may elect freshman football or freshman cross country. Men taking classwork are divided into teams and receive the benefit of cooperative effort as well as the advantages of healthful, big-muscle activities.

2 laboratory hours, credit, 1.

The DEPARTMENT.

3. **III. PHYSICAL EDUCATION ACTIVITY. RECREATION.**—For freshmen. Outdoor games in the regular classwork include soft ball, cricket, simplified volley ball, swimming, tennis, and miscellaneous games using their respective skills, such as long base, end ball, home run ball, volley ball newcomb, and dodge volley ball. Men may elect freshman baseball or freshman track. The course aims to encourage health habits and to give a fund of exercise material for use in after-school days.

2 laboratory hours, credit, 1.

The DEPARTMENT.

25. **I. PHYSICAL EDUCATION ACTIVITY. RECREATION.**—For sophomores. Continuation of Course 2 with more difficult skills and coordinations. Advanced soccer and touch football and swimming, and miscellaneous games using their respective skills are included; a physical achievement test consisting of track and field events is given. Men may elect tennis, golf, varsity football, varsity cross country or varsity soccer. The course aims to develop skills that will make participation pleasurable and establish exercise habits for later life.

2 laboratory hours, credit, 1.

The DEPARTMENT.

26. **III. PHYSICAL EDUCATION ACTIVITY. RECREATION.**—For sophomores. Continuation of Course 3, with progression. Archery, badminton, golf, soft ball, swimming, and advanced volley ball and miscellaneous games utilizing their respective skills are included. The men are introduced to these games with carry-over value during the first half of the term and may then specialize in one of them for the remainder of the term. Leadership, followship, and self-expression through participation are emphasized. Men may elect tennis, golf, varsity baseball or varsity track.

2 laboratory hours, credit, 1.

The DEPARTMENT.

Elective Courses.

71. **I. PHYSICAL EDUCATION THEORY. OUTLINE COURSE FOR TEACHER-COACHES.**—For juniors and seniors. Admission by permission only. This course outlines the coaching of football and soccer. There are several lectures on competitive psychology. Lectures, collateral readings, theory situations and notebook.

2 class hours.

Credit, 2.

Professor GORE and Mr. BRIGGS.

72. I. PHYSICAL EDUCATION PRACTICE. NORMAL COURSE FOR TEACHER-COACHES.—For juniors and seniors. Admission by permission only. Directed teaching, practice teaching, observation, officiating, and supervision of football, soccer, and physical education classes.

2 2-hour laboratory periods, by arrangement, credit, 1.
Professor GORE and The DEPARTMENT.

74. I. PHYSICAL EDUCATION THEORY. SCHOOL PROGRAMS OF PHYSICAL EDUCATION.—For juniors and seniors. This course includes lectures covering the objectives, organization, significance, and content of school programs in grade and high school. The course is correlated with the requirements of the State Department of Education. Rhythmics, folk dancing, games, marching, story plays, self-testing activities, apparatus work, posture training, achievement tests, miscellaneous games, and intramural contests are considered.

2 class hours.

Credit, 2.

Assistant Professor DERBY and Mr. BRIGGS.

81. II. PHYSICAL EDUCATION THEORY. OUTLINE COURSE FOR TEACHER-COACHES.—For juniors and seniors. Admission by permission only. Continuation of Course 71. This course includes the outline of coaching basketball, hockey, and winter sports; also lectures on athletic pedagogy. Lectures, collateral readings, theory situations and notebook.

2 class hours.

Credit, 2.

Professor GORE and Mr. BALL.

82. II. PHYSICAL EDUCATION PRACTICE. NORMAL COURSE FOR TEACHER-COACHES.—For juniors and seniors. Admission by permission only. Directed teaching, practice teaching, observation, officiating, and supervision of basketball, hockey, winter sports and physical education classes.

2 2-hour laboratory periods, by arrangement, credit, 1.

Professor GORE and The DEPARTMENT.

84. II. PHYSICAL EDUCATION THEORY. HISTORY AND PURPOSES OF PHYSICAL EDUCATION.—For seniors. A brief study of the history of the development of the various systems of physical education and the men who promoted them and a study of the aims and ideals of present-day physical educators. Lectures, textbooks, reports on assigned readings, and a final outline.

2 class hours.

Credit, 2.

Professor HICKS.

85. II. PHYSICAL EDUCATION THEORY. SCHOOL PROGRAMS OF HEALTH EDUCATION.—For juniors and seniors. This course gives the teaching, supervision, and administration of secondary school health programs. Progression of content, methods of presentation, and motivation will be considered. Duties of health counselors and the coordination of all health factors for the child are stressed. Trends in health education, use of materials, health tests and measurements as well as the teaching of health habits, and safety education set-ups are considered.

2 class hours.

Credit, 2.

Professor RADCLIFFE and Mr. BRIGGS.

91. III. PHYSICAL EDUCATION THEORY. OUTLINE COURSE FOR TEACHER-COACHES.—For juniors and seniors. Admission by permission only. Continuation of Courses 71 and 81. This course outlines the coaching of baseball, track and field athletics.

2 class hours.

Credit, 2.

Professor GORE, Assistant Professor DERBY, Mr. BALL, and Mr. BRIGGS.

92. III. PHYSICAL EDUCATION PRACTICE. NORMAL COURSE FOR TEACHER-COACHES.—For juniors and seniors. Admission by permission only. Directed teaching, practice teaching, observation, officiating, and supervision of baseball, track and field athletics, miscellaneous games, intramural athletics, and physical education classes.

2 2-hour laboratory periods, by arrangement, credit, 1.

Professor GORE and The DEPARTMENT.

95. **III. PHYSICAL EDUCATION THEORY AND PRACTICE. FIRST AID AND TRAINING.**—For seniors. This course consists of first aid as applied in the home, on the street and on the athletic field. Prevention of athletic injuries, determination of fatigue, and conditioning are considered. Practice is given in bandaging and taping. Men who complete this course satisfactorily will be given American Red Cross First Aid Certificates. Lectures, demonstrations and notebook.

1 class hour. 1 2-hour laboratory period, by arrangement, credit, 1.
Professor RADCLIFFE.

96. **III. PHYSICAL EDUCATION THEORY AND PRACTICE. TRAINING COURSE FOR CAMP COUNSELORS.**—For seniors. A study of the organized camp as a part of education and the qualifications necessary to become camp counselors. Development, objectives, and educational aims of the organized camp, and types and equipment of camps are considered. A job analysis of the camp counselor is made. Special skills and the theory and practice of camping in the open are considered.

2 class hours. 1 2-hour laboratory period, by arrangement, credit, 2.
Professor GORE and Mr. BRIGGS.

WOMEN.

Required Courses.

1. **I. HYGIENE.**—For freshmen. Lectures on personal hygiene, including the physiological basis for sound health habits, the importance of the systematic planning of a student's daily program in order to provide the proper amounts of time for study, with suitable periods of sleep, relaxation, recreation, and sports; posture, appropriate types of exercise, proper nutrition, social adjustment, the necessity for frequent medical, optical, and dental advice; sanitation and group health requirements.

1 class hour. Credit, 1.
Professor RADCLIFFE.

4. **I. RECREATION.**—For freshmen. Outdoor games.
3 scheduled hours, credit, 2.
Mrs. HICKS.

5. **II. GYMNASTICS.**—For freshmen. Body mechanics, folk and national dancing, gymnastics.
3 scheduled hours, credit, 2.
Mrs. HICKS.

6. **III. RECREATION.**—For freshmen. Outdoor games.
2 scheduled hours, credit, 1.
Mrs. HICKS.

27. **I. RECREATION.**—For sophomores. Outdoor games.
5 scheduled hours, credit, 3.
Mrs. HICKS.

28. **II. GYMNASTICS.**—For sophomores. Body mechanics, folk and national dancing, gymnastics, rhythms, games.
3 scheduled hours, credit, 2.
Mrs. HICKS.

29. **III. RECREATION.**—For sophomores. Outdoor games.
5 scheduled hours, credit, 3.
Mrs. HICKS.

Elective Courses.

50. **II. RHYTHMS.**—For juniors. Rhythmic dancing, clog dancing.
3 scheduled hours, credit, 2.
Mrs. HICKS.

76. **II. RHYTHMS.**—For seniors. Rhythmic dancing, clog dancing.
3 scheduled hours, credit, 2.
Mrs. HICKS.

The Graduate School.

Graduate courses leading to advanced degrees have been available at the College practically since its establishment. At the beginning opportunities for graduate study were limited to work leading to the degrees of doctor of science and doctor of philosophy granted in Chemistry, Botany, and a few other departments. Since then the work has expanded until major work toward the doctor of philosophy and master of science degrees is offered by the following departments:

Agricultural Economics	Chemistry
Agronomy	Entomology
Bacteriology and Physiology	Horticulture
Botany	Pomology
Rural Sociology	

The following departments offer major work toward a master of science degree only:

Agricultural Education	Floriculture
Animal Husbandry	Horticultural Manufactures
Dairy Industry	Poultry Science

The degree of master of landscape architecture is granted to students completing the two years' graduate work offered by the department of landscape architecture; while students taking the equivalent of one year's graduate work in that major may be granted the degree of bachelor of landscape architecture.

Several other departments in the institution, while not regularly organized for major work in the graduate school, do, nevertheless, offer courses which may be selected for minor credit. These are:

Forestry	Physics
Mathematics	Veterinary Science
Zoology and Geology	

The general requirements of the graduate school regarding entrance, residence, credits, tuition, fees, etc., together with specific information concerning details of interest to prospective students are set down in a separate bulletin which may be obtained upon request to the Director's Office.

The Summer School.

The summer session offers courses of college grade only. Both undergraduate and graduate courses are given, intended for school superintendents, normal school, high school, college, and university teachers, college undergraduates, and any other serious student who is suitably prepared. When satisfactorily completed, these courses carry college credit.

ADMISSION.

There are no formal examinations for admission to the summer school. Undergraduate students are admitted to such courses as their preparation justifies. Admission to the graduate school will be granted to graduates of the Massachusetts State College and to the graduates of other institutions having substantially equivalent requirements for the bachelor's degree.

The following schedule of courses, given in the summer of 1931, indicates the character and extent of the work, but is subject to modification.

General Bacteriology	Sociological Philosophy of Education
Business Law	The Employed Teacher of Agriculture
Elements of Economics	Vocational Education
Principles and Methods of Teaching	Secondary Education
History of Education	American Literature
Introduction to Psychology	Ibsen and the Contemporary Drama
Educational Psychology	The Novel
Advanced Psychology	Poetry of the Nineteenth Century
History of Greek and Medieval Philosophy	Dramatic Presentation
Intelligence Tests and Educational Tests	Garden Flowers and Bedding Plants
Ethics	Flower Arrangement
Vocational Guidance	English History
Philosophy of Education	History of the United States
	Recent Economic History
	Public Health
	Introduction to Sociology

FEES.

The tuition fee for undergraduate work in the summer session is ten dollars together with a recreation fee of three dollars, and laboratory fees in certain courses. There are no tuition or laboratory fees for students registered in the Graduate School as candidates for advanced degrees at the Massachusetts State College. For other graduate students the usual Summer School expenses of tuition, special fees and auditor's fee will be collected.

For further information, write or apply to Roland H. Verbeek, Director of Short Courses, Massachusetts State College, Amherst, Mass.

For information concerning graduate work in the summer school, write or apply to Fred J. Sievers, Director of the Graduate School, Massachusetts State College, Amherst, Mass.

Non-Degree Courses of Instruction.

THE STOCKBRIDGE SCHOOL OF AGRICULTURE.

General Information.

The Stockbridge School of Agriculture was organized in 1918, under the name of "The Two-Year Course in Practical Agriculture," for the purpose of meeting the demand for a short course in agriculture which might be taken by students who could not satisfy college entrance requirements or who, for one reason or another, were unable to take the college course. The name was changed to the present one by vote of the trustees of the college in 1928.

Since its organization the school has registered over 1,300 students and now has over 800 graduates located largely in Massachusetts but found also throughout New England and in many other states of the Union. More than 200 students were registered in the school during the year 1930-31. This course trains men and women for the practice of farming or associated agricultural industries. Graduation from it does not fulfill the requirements for entrance into the degree course nor are credits earned during the course transferable toward credit for a degree.

As the course is now organized, students may specialize in any one of seven vocations: animal husbandry, dairy manufactures, floriculture, horticulture, fruit growing, poultry husbandry or vegetable gardening. Specialization in a vocation does not prevent students from securing a general working knowledge of other subjects. The Stockbridge School will appeal not only to young men and women, but also to men and women of mature years and practical experience who wish to know more about the business of farming or associated agricultural industries. The School is not intended for students enrolled in a high school; such students should complete their high-school course before seeking admission to this school.

Entrance Requirements.

Applicants for admission must be at least seventeen years of age and must have completed at least an elementary school course or its equivalent. Before being enrolled for the work of the second year, students must have completed six months' practical experience approved by the supervisor of placement training.

Students who are already enrolled in high schools and who wish to enter this school before the completion of the high-school course should bring a statement, either from the principal of the high school or from the parent or guardian, requesting enrolment.

Instruction.

The instruction is given by the regular faculty by means of classroom teaching, laboratory exercises, and practical work. The work of the classroom is supplemented by demonstration work in the laboratory, dairy room, greenhouse, and stables, and by a six months' period of farm placement training during the spring and summer following the second term of resident instruction. The course is designed to offer plain, practical, direct information, and to establish the underlying reasons for, as well as methods employed in, the various operations.

Credit and Diploma.

In order to obtain a diploma, the student must complete satisfactorily all the work required in the vocational course which he has selected. This course consists of five terms of class and laboratory instruction, supplemented by six months of practical experience gained between the second and third terms of resident

Part II.

instruction and subject to the approval of the supervisor of placement training. No student failing to meet the requirements of his six months' summer training can be enrolled for the three terms of the second year, since he is not entitled to the diploma of the School.

Graduates of county schools of agriculture or of agricultural departments of high schools may complete the course for a diploma in one year if they are recommended by the director of the county school or by the instructor in charge of the department of agriculture in the high school.

Special Catalog.

For a complete catalog of the Stockbridge School of Agriculture, containing an application blank, write or apply to Director Roland H. Verbeck, Massachusetts State College, Amherst, Mass.

THE WINTER SCHOOL.

Short Courses are based on the idea that the motive which inspires study is the most significant factor in study itself, and that this motive rises when the student himself realizes he faces a problem that calls for a solution. Therefore, there is no age limit. Enrolled in short courses are found the young and the old, the experienced and the inexperienced, the theoretical and the practical. In this grouping there is a value, since students learn from each other as well as from the instructors. Practically all Short Course students intend to make a direct application of the knowledge gained. Hence the aim of Short Course work is to offer the largest amount of information and training in agricultural and horticultural lines in the shortest possible time. During the past twenty years Short Courses have served hundreds of students in this Commonwealth, and the demand for these courses in recent years has steadily continued.

The Winter School has been established for a number of years at the college, and has proved to be very popular with farmers, their wives, sons, and daughters, teachers, college graduates, and others. This school begins about the first of January. Instruction will be offered this year in—

Ten Weeks' Practical and Scientific Course for Florists. (Given on alternate years, — next year, 1934.)

Ten Weeks' Course in General Farming. (Including dairy farming and fruit growing.)

Ten Weeks' Course in Greenkeeping.

Ten Weeks' Course in Poultry Raising.

A series of special one-week courses in ice cream making, butter making, milk testing, and market milk are offered. During the one week the student devotes all of his time to the work of the special course in which he has enrolled. The instruction lasts throughout the day from 8 to 5. These courses meet a very definite need in the State for those who wish instruction, but who cannot attend for a longer period of time, and who do not wish to take other subjects.

Fees.

For all students taking the full ten-week term of the Winter School there is a tuition fee of \$10 and, in addition, a registration fee of \$5. There are no laboratory fees in connection with any of the courses.

For further information, write or apply to Roland H. Verbeck, Director of Short Courses, Massachusetts State College, Amherst, Mass.

DEGREES CONFERRED—1931.

DOCTOR OF PHILOSOPHY (Ph.D.)

DeVault, Samuel Henry, A.B., Carson-Newman College, A.M., University of North Carolina	College Park, Md.
Farrar, Clayton Leon, B.S., Kansas State Agricultural College	Amherst.
Rivnay, Ezekiel, B.S., Massachusetts State College, M.S., Massachusetts State College	Amherst.
Shepard, Harold Henry, B.S., Massachusetts State College, M.S., University of Maryland	Takoma Park, Md.

MASTER OF SCIENCE (M.S.)

Beeman, Marjorie Elise, B.S., Massachusetts State College	Ware.
Boisvert, Oscar, B.A.S., Laval University	Lyster Station, Canada.
Bovarnick, Max, B.S., Massachusetts State College	Mattapan.
Cassidy, Morton Harding, B.S., Massachusetts State College	Watertown.
Clague, John Albert, B.S., University of Washington	Tacoma, Wash.
Cowing, William Albert, A.B., Colby	West Springfield.
Foley, Richard Carol, B.S., Massachusetts State College	Portland, Me.
Lynch, Elizabeth Anne, B.S., Massachusetts State College	Easthampton.
Thelin, Guy, B.S., South Dakota State College	Sioux Falls, S. Dak

BACHELOR OF SCIENCE (B.S.)

Allen, Raymond Clayton	Barre.
Barry, Elizabeth Evans	Lynn.
Bartlett, Leonard, Jr.	East Walpole.
Bartsch, Nelson Edgar	Belmont.
Beaman, Evelyn Armstrong	Leverett.
Bonney, Walter Twichell	Springfield.
Bosworth, William Ezra, Jr.	Holyoke.
Bottomly, Bruce Ely	Worcester
Bradley, Sara Elizabeth	Lee.
Brooks, John Hapgood, 3rd	Worcester.
Brown, Alfred Alexander	Methuen.
Buck, Wilbur Francis	Stockbridge.
Burnham, Catharine Annette	Shelburne Falls
Calvi, John	Athol.
Campbell, Ann Jocelyn	Springfield.
Carpenter, Henry Dunphe	Bridgewater
Chadwick, Alan William	Worcester.
Chenoweth, Winifred Lee	Amherst.
Clarkson, Marjorie	Worcester.
Costello, John Paul	Franklin.
Cucinotta, Lewis Bohlin	Camden, Me
Dangelmayer, Wynton Reid	Waltham.
Daniels, Arthur Richards	Dedham.
Darling, Herbert Daniel	Brighton.
Davis, Arnold Mearns	Berlin.
Davis, George Merrill	South Lee.
Davis, Richard William	Melrose.
DeFalco, Iris Norma	North Adams.
Digney, Anna Katherine	Boston.
Douglass, Frank Taylor	Springfield.
Dyer, Cora Gennette	Northampton.
Field, George White	Florence.
FitzGerald, Paul Richard	Revere.
Fraser, Richard Arthur	Lowell.
Frey, Newell William	South Hadley Falls.
Friedrich, Thelma Selene	Florence.
Frost, Edmund Locke	Arlington.
Gilgut, Constantine Joseph	Athol.
Goodrich, Raymond Eldred	Amherst.
Gordon, Jeane Anne	Holyoke.
Gorman, Joseph William	Upton.
Gower, Albert Hugh	Brighton.
Griffith, Janet Anne	Wareham.
Guenard, John Robert	Dracut.
Gula, Joseph John	Bondsville.
Hacker, Walter Breed	Natick.
Hanks, Harry Mason, Jr.	Nantucket.
Hastings, Emory Barton	Athol.
Hayes, Ernest Littlefield	Milton.
Hines, Francis Martin	Arlington.
Holway, Alfred Harold	Holyoke.
Johnson, Arthur Clement Marriott	Greenfield.
Johnson, Erik Alfred	Springfield.
Jones, Lawrence Arthur	Greenfield.
Kimball, Philip Wadsworth	Northboro.
King, Marc Nesmith	Waltham.
Kneeland, Ralph Folger, Jr.	Attleboro.
Koerber, Margaret Eleanore	Northampton.
Lamb, Francis Bleakie	White Plains, N. Y.
Lawrence, John Cheney	Brimfield.
LeClair, Gertrude Leah	Southbridge.
Little, Charles Lunt	West Medford.
Loar, Russell Dudley	Longmeadow.

Part II.

Lyman, Evelyn May	East Longmeadow.
Manty, Charles Weikko	Maynard.
Marshall, Mary Moore	Whitineville.
Mason, Frank Ford, Jr.	Williamstown.
McGuckian, John William	Rosindale.
McKeen, Richard Potter	Watertown.
Mead, Gertrude Alice	Townsend.
Meyer, Beatrice Florentine	Amherst.
Monk, Marjorie	Longmeadow.
Myrick, Norman	Longmeadow.
Nash, Clyde Woodbury	Haverhill.
Nason, David Mitchell	Medford.
Norell, Frieda Brita	Amherst.
Northcott, John Warren, Jr.	New Bedford.
Oliver, George West	Watertown.
Pierce, Gertrude Keith	Shelburne Falls
Plantinga, Martin Peter	Amherst.
Pray, Francis Civile	Amherst.
Pyenson, Louis	East Lee.
Reuter, Anna-May	Northfield.
Rooney, Robert Colbert	Reading.
Rubin, Theodore	Brooklyn, N. Y.
Russell, Grace Shirley	Easthampton.
Scott, Ruth Elizabeth	North Hadley.
Shaw, Frank Robert	Belchertown.
Smith, Ernest Gordon	Medford.
Smith, Paul Augustus	Malden.
Somes, John	Otis.
Spiewak, Pauline Anna	Holyoke.
Staniewski, Leon	Amherst.
Stevenson, Errol Burton	Brockton.
Stoddard, Herbert Tilden.	Cohasset.
Stuart, Robert Emerson	Littleton.
Takahashi, Leopold Hanzo	Amherst.
Tashjian, Souren Markar	Amherst.
Tiffany, Don Cecil	Cambridge.
Troy, Frederick Sherman	Arlington.
Tucker, Robert Barclay	Middleboro.
Upton, Shirley	North Reading.
Vichules, Marguerite Veronica	Northampton.
Vincent, Lionel Lewis	Westminster.
Wahlgren, Cecil Hardy Lewis	Melrose.
Warren, Allen Johnson	New Haven, Conn
West, Allen Sherman, Jr.	Springfield.
Westendarp, Edwin Maurice	Saugus.
White, Edwin Theron	Millbury.
Whittum, Frederick Kinsley	Springfield.
Williams, Inez Wilhelmina	Brockton.
Woods, James Joseph, Jr.	Leominster.
Wright, Denise	Amherst.
Yeatman, Alwyn Frederick	Springfield.

BACHELOR OF VOCATIONAL AGRICULTURE (B.Voc.Agr.)

Burnham, John	Shelburne Falls.
Holm, Carl Gustaf	Worcester.
Shepard, Lawrence Moody	West Boylston.

BACHELOR OF LANDSCAPE ARCHITECTURE (B.L.A.)

Lynch, Elizabeth Anne	Easthampton.
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HONORARY DEGREES
DOCTOR OF SCIENCE (D.S.)

Joseph Lawrence Hills	Burlington, Vt.
Charles Sumner Howe	North Amherst.

REGISTRATION, 1931-32.

GRADUATE STUDENTS.

Superior figures indicate: ¹ Enrolled during academic year 1930-31.

² Enrolled in Summer School 1931.

³ Enrolled during first term 1931-32.

Albrecht, Ira W. ^{1,2}	Chemistry.	Agl. Education	Westfield.
B.S., Columbia University.			
Allen, Elizabeth Mae ¹			Amherst.
B.S., William Smith College.			
Allen, Thomas ²			Belchertown.
A.B., Colgate University.			
Avin, Samuel. ²	Bacteriology		Dorchester.
B.S., A.M., Boston University.			
Baker, Mrs. Mary G. ³	Agl. Education, English, Home Economics		So. Bend, Ind.
B.S., Purdue University.			
Banta, Luther ¹			Amherst.
B.S., Cornell University.			

Bartlett, Herbert F. ²	Horticulture	West Springfield.
B.S., Massachusetts State College.		
Bartlett, Lewis William. ²	Agl. Education	Hinsdale.
B.S., Tufts College.		
Batson, Ferris Summer. ^{1 2}	Landscape Architecture	Perkinston, Miss.
B.S., Mississippi A. & M. College.		
Beaman, Evelyn Armstrong. ³	Agl. Education, English	Leverett.
B.S., Massachusetts State College.		
Beeman, Marjorie Elise. ¹	Bacteriology and Physiology, Zoology	Ware.
B.S., Massachusetts State College.		
Beesley, Barbara. ²	Mathematics, English	Chicopee.
B.S., Bridgewater Normal.		
Bell, Ellsworth William ¹		Amherst.
B.S., Pennsylvania State College, M. S., University of Vermont.		
Bennett, Emmett. ¹	Chemistry, Bacteriology and Physiology	Blanchester, Ohio.
B.S., Ohio State University.		
Bergan, Carl Augustus. ¹	Agl. Education	Northampton.
B.S., Massachusetts State College.		
Bicknell, Marguerite E. ³	Sociology, Psychology, Agl. Econ.	Amherst.
B.A., Smith College.		
Bigler, William Leslie. ¹	Landscape Architecture	Greenville, Mich.
B.S., Michigan State College.		
Bittinger, Richard. ^{1 2}	Agl. Education	Springfield.
B.S., Massachusetts State College.		
Boisvert, Oscar. ¹	Dairy Industry, Bacteriology	Lyster Station, P. Q.
B.A.S., Laval University.		
Bond, George E. ²	Agl. Education	Thetford, Vt.
B.S., University of Vermont.		
Bosworth, William Ezra, Jr. ³	Agl. Education, Bact. and Physiology	Holyoke.
B.S., Massachusetts State College.		
Boutell, Frank John. ¹	Agl. Education, Poult. Sc., Bact., Ag. Eng.	Boston.
B.S., Massachusetts State College.		
Bovarnick, Max. ¹	Agricultural Economics, Education	Mattapan.
B.S., Massachusetts State College.		
Bowler, James E. ³	Chemistry	Springfield.
B.S., St. Lawrence University.		
Brackley, Floyd Earle. ³	Agl. Education, History, Math. and Physics	Strong, Me.
B.S., Massachusetts State College.		
Bradley, Sally. ¹	Sociology, Botany, Agl. Education	Lee.
B.S., Massachusetts State College.		
Briggs, Lawrence Elliott. ^{1 3}	Agl. Education	Rockland.
B.S., Springfield College.		
Brown, Alfred A. ^{1 2 3}	Agl. Economics	Lawrence.
B.S., Massachusetts State College.		
Brown, J. Lee. ³	Landscape Architecture	Ft. Collins, Colo.
B.S., Colorado Agricultural College.		
Brown, Kenneth Theodore. ^{1 3}	Landscape Architecture	Mexico, Me.
B.S., University of Maine.		
Bullis, Kenneth Lloyd ¹		De Kalb, Ill.
D.V.M., Iowa State College.		
Burnham, Catharine A. ^{2 3}	Botany, English	Shelburne.
B.S., Massachusetts State College.		
Calvi, John. ³	Chemistry	Athol.
B.S., Massachusetts State College.		
Canis, Robert Paul. ¹	Botany, Chemistry	Ozone Park, Long Island,
B.S., M.S., Rutgers University.		N.Y.
Cassidy, Morton H. ¹	Agl. Education, Entomology, Chemistry	Watertown.
B.S., Massachusetts State College.		
Chadwick, Alan William. ²	Agl. Education, Agl. Economics	Worcester.
B.S., Massachusetts State College.		
Chadwick, John Shore. ¹	Landscape Architecture	Worcester.
B.S., Massachusetts State College.		
Chap, James John. ³	Chemistry, Mathematics and Physics	West Springfield.
A.B., Bates College.		
Chapin, Ellis W., Jr. ³	Agl. Education, Mathematics and Physics	Chicopee Falls.
B.S., Massachusetts State College.		
Chase, Weld Thayer. ³	Landscape Architecture	Newport, R. I.
B.S., Rhode Island State College.		
Chenoweth, Winifred Lee ¹		North Amherst.
B.S., Massachusetts State College.		
Childs, Harriet Evelyn. ³	Agl. Education, English	Deerfield.
A.B., Smith College.		
Claffey, Francis Joseph. ³	Entomology, Botany	Holyoke.
B.A., University of Maine.		
Clague, John A. ^{1 3}	Horticulture, Bacteriology and Physiology	Tacoma, Wash.
B.S., University of Washington.		
Clarke, Miriam Keith. ^{1 3}	Bacteriology and Physiology, Chemistry	Abington.
B.A., Mt. Holyoke College.		
Cleveland, Maurice M. ^{1 2 3}	Chemistry, Hort. Manuf., Bact. and Physiol.	East Pepperell.
B.S., Massachusetts State College.		
Cohen, Maurice Aaron ³		Holyoke.
A.B., Dartmouth College.		
Cowing, Ulmont Cleal. ²	Agl. Education	West Springfield.
B.S., Colby College.		
Cowing, William A. ¹	Agl. Education	West Springfield.
A.B., Colby College.		
Cowing, William Thornton. ²	Agl. Education	West Springfield.
B.S., Colby College.		
Crowley, Dennis M. ²	Agl. Education, Horticulture	Brighton,
B.S., Massachusetts State College.		

Davis, Arnold M. ¹	Landscape Architecture	Berlin.
B.S., Massachusetts State College.		
DeVault, Samuel H. ¹	Agl. Economics, Sociology, Agl. Education	College Park, Maryland.
A.B. and A.M., University of Missouri.		
Dickinson, Lawrence Sumner. ¹	Horticulture	Amherst.
B.S., Massachusetts State College.		
Digney, Anna Katherine. ²	Agl. Education, Sociology	Boston.
B.S., Massachusetts State College.		
Dillon, Frank Kane. ³	Agl. Education	Randolph.
B.S.E., Bridgewater Normal School.		
Donley, Jessie Elizabeth. ^{1,2,3}	Agl. Economics	Plainfield, N. J.
A.B., Mt. Holyoke College.		
Dunlap, Glen LeRoy. ³		Amherst.
D.V.M., Kansas State College.		
Dyer, Cora Gennette. ²	Chemistry	Northampton.
B.S., Massachusetts State College.		
Farrar, Clayton Leon. ¹	Entomology, Botany, Chemistry	Amherst.
B.S., Kansas State Agricultural College.		
Fenton, Daniel Edward. ³	Sociology, English	Holyoke.
A.B., Holy Cross College.		
Field, George W. ³	Agl. Education, Physics and Mathematics	Florence.
B.S., Massachusetts State College.		
Foley, Mary Joan. ^{1,3}	Agl. Economics, Agl. Education, Sociology	Amherst.
B.S., M.S., Massachusetts State College.		
Foley, Richard Carol. ¹	Agronomy, Animal Husbandry	Portland, Me.
B.S., Massachusetts State College.		
France, Ralph Lyle. ¹		Amherst.
B.S., University of Delaware.		
M.S., Massachusetts State College.		
Frey, Newell William. ³	Agl. Education, Chem., Bact. and Physiology	South Hadley Falls.
B.S., Massachusetts State College.		
Geissler, George H. ^{1,3}	Entomology, Zoology, Botany	Lawrence.
B.S., Connecticut Agricultural College.		
Germany, Claude B. ¹	Agl. Education, Mathematics	Athol.
A.B., Harvard College.		
Giles, Alice Mary. ²	History, English	Springfield.
A.B., Brown University.		
Gilgut, Constantine Joseph. ³	Botany, Chemistry, Entomology	Athol.
B.S., Massachusetts State College.		
Ginsburgh, Stanley A. ³	Economics, Sociology, History	Holyoke.
A.M., Johns Hopkins University.		
Gleason, Edward K. ¹	Agl. Education, Mathematics and Physics	Shrewsbury.
B.S., Syracuse University (N. Y. State College of Forestry).		
Goodell, Herbert A. ³	Zoology	Southbridge.
B.S., Massachusetts State College.		
Goodell, Herman Ulysses. ³	Zoology	Southbridge.
B.S., Massachusetts State College.		
Goodrich, Raymond Eldred. ³	Agl. Education, English	Amherst.
B.S., Massachusetts State College.		
Goulston, Julian. ²	Agl. Education	Dorchester.
B.B.A., M.Ed., Boston University.		
Gower, Albert H. ³	Chemistry	Malden.
B.S., Massachusetts State College.		
Greenwood, Mary Ann. ²	Agl. Education	Springfield.
B.A., Wellesley College.		
Griffiths, Francis. ³	Chemistry, Bacteriology and Hort. Manufactures	Gloucester.
B.S., University of Washington.		
Haddock, Jay La Mar. ^{1,2}	Agronomy, Chemistry	Bloomington, Ida
B.S., Brigham Young University.		
Hadley, Allan M. ^{1,3}	Agl. Education	Agawam.
B.A., Clark University.		
Harlow, John Miller. ¹	Landscape Architecture	Duluth, Minn.
A.B., Dartmouth College.		
Hassett, James Frank. ³	Agl. Education	Springfield.
Ph.B., Holy Cross College.		
Hastings, Emory Barton. ³	Agl. Education, English	Athol.
B.S., Massachusetts State College.		
Hatch, Herbert T. ¹	Agl. Education	South Hanover.
B.S., Massachusetts State College.		
Hoffman, Erich. ¹		Halle (Saale), Germany.
D.Sc., University of Halle (Saale).		
Holway, Alfred Harold. ^{1,2,3}	Agl. Education, Mathematics and Physics	Holyoke.
B.S., Massachusetts State College.		
Horne, Thomas Rix. ¹	Landscape Architecture	Abbeville, Ala.
B.S., Alabama Polytechnic Institute.		
Horsley, Ernest M. ^{1,3}	Dairy Industry, Bacteriology, Chemistry	Brigham City, Utah.
B.S., Utah State Agricultural College.		
Howard, Lucius Alexander. ¹	Landscape Architecture	Ridgewood, N. J.
B.S., Massachusetts State College.		
Howard, Martin Stoddard. ¹	Landscape Architecture	Northfield, Vt.
B.S., Massachusetts State College.		
Howes, Richard W. ³	Agl. Education	Springfield.
B.S., Rhode Island State College.		
Hunter, Walter Gordon. ¹	Landscape Architecture	South Sudbury.
B.S., Massachusetts State College.		
Hutchings, Frank F. ^{1,2}	Agl. Education, Mathematics	New Bedford.
B.S., Massachusetts State College.		
Isham, Paul Dwight. ^{1,2,3}	Horticultural Manufactures, Chemistry, Bacteriology	Hampden.
B.S., Massachusetts State College.		

Jack, Melvin Clifton. ²	Agl. Education	Taunton.
B.S., Massachusetts State College.		
Jones, Fred William. ^{1 2 3}	Chemistry	Otis.
B.S., Massachusetts State College.		
Jones, Marshall Elmer. ^{1 2}	Sociology, Agl. Economics	Northampton.
A.B., Washington University.		
B.D., Harvard Divinity Episcopal Theol. School		
Jones, William Leslie. ^{1 2}	Agronomy, Botany	Bryan, Texas.
B.S., M.S., A. & M. College, Texas.		
Judd, Elizabeth. ²		Holyoke.
B.A., Wellesley College.		
Keller, Vernet S. ^{1 2 3}	Agl. Education	Hatfield.
B.S., Middlebury College.		
Kimball, Evelyn D. ³	Bacteriology, Chemistry, Mathematics	Amherst.
B.S., Middlebury College.		
Knapp, Dorothee. ³		Halle (Saale), Germany.
University of Halle.		
Knightly, Agnes E. ^{2 3}	Agl. Education	Amherst.
A.B., Mt. Holyoke College.		
Labarge, Robert Holland. ^{1 3}	Agl. Education, Chemistry	Holyoke.
B.S., Massachusetts State College.		
Landry, Herbert A. ¹	Agl. Education	West Springfield
B.M.E., School of Engineering, Northeastern University		
Langford, John Anthony. ^{2 3}	Agl. Education	Springfield.
A.B., Holy Cross College.		
Lanphear, Marshall C. ²		Amherst.
B.S., M.S., Massachusetts State College.		
Larkin, Clarence J. ²	Agl. Education	Haydenville.
B.A., Amherst College.		
Lawrence, John Cheney. ²	Landscape Architecture	Brimfield.
B.S., Massachusetts State College.		
Lilly, Dorothy Hammond. ²	Agl. Education	Athol.
A.B., Smith College.		
Lindquist, Harry Gotfred. ³	Dairy Industry	Amherst.
B.S., Massachusetts State College.		
M.S., University of Maryland.		
Loud, Miriam Johnson. ¹	Landscape Architecture	Springfield.
B.S., Massachusetts State College		
Lowry, Wayne Judson. ^{1 2 3}	Horticulture, Landscape Architecture	Midland, Mich.
B.S., Michigan State College.		
Lynch, Elizabeth Anne. ¹	Agl. Education, Landscape Architecture	Easthampton.
B.S., Massachusetts State College.		
McDonnell, Charles Patrick. ^{1 2 3}	Agl. Education	West Springfield.
A.B., Catholic University.		
McGeoch, Charles K. ¹	Agl. Education	North Amherst.
B.S., Massachusetts State College.		
McIntire, Clara Luella. ^{2 3}	Agl. Education	Springfield.
B.C.S., Northeastern University.		
McKenna, Francis C. ³		Northampton.
A.B., University of Alabama.		
Magnuson, Herman Rainville. ¹	Landscape Architecture	Manchester.
B.S., Massachusetts State College.		
Mahoney, James Henry. ²	Botany	Holyoke.
A.B., Holy Cross College.		
Merritt, Lucius Augustus. ¹	Agl. Education	Williamsburg.
B.S., Trinity College.		
Miller, Donald Raymon. ²	Agl. Education	Northampton.
A.B., Bucknell University.		
Miller, Mabel Atkins. ²		Amherst.
B.A., Mt. Holyoke College.		
Monosmith, Rudolph Olney. ²	Landscape Architecture	College Station, Texas.
B.S., Mississippi A. & M. College.		
Moore, William James, Jr. ³	Agronomy, Plant Physiology, Chemistry	Pittsburgh, Pa.
B.S., M.S., Pennsylvania State College.		
Moriarty, Helen Elizabeth. ^{1 3}	Agl. Education	Holyoke.
A.B., Mt. Holyoke College.		
Morse, Miriam. ^{1 3}	Entomology, Zoology, Botany	Amherst.
B.S., St. Lawrence University.		
M.S., Massachusetts State College.		
Moseley, Louis H. ²	Agl. Education	Glastonbury, Conn.
B.S., Massachusetts State College.		
Mueller, William Samuel. ²	Dairy Industry	Tower Hill, Ill.
B.S., University of Illinois.		
M.S., State University of New Jersey.		
Mulford, William. ¹	Landscape Architecture	Northampton.
A.B., Harvard College.		
Newcomb, Carolyn Pomeroy. ²		Northampton.
A.B., Smith College		
Nickerson, Ralph Francis. ^{1 3}	Chemistry, Physics	Attleboro.
B.S., Massachusetts State College.		
Nicolaides, Costas. ^{1 2 3}	Poultry Science, Embryology, Chemistry	Waterbury, Conn.
B.S., Rutgers University.		
Nitkewiz, Boleslaw. ³	Botany, Chemistry	South Hadley.
B.S., Massachusetts State College.		
O'Brien, Mary Catherine. ²	Agl. Education	Greenfield.
B.S. in Ed., Massachusetts Normal Art School.		
O'Conner, Michael Gerald. ³	Chemistry, Horticultural Manufactures	Springfield.
B.S., St. Lawrence University.		
O'Malley, Michael J. ^{1 3}	Agl. Education	West Springfield.
B.S., University of New Hampshire.		

Packard, Ransom Clayton. ¹ ² Bacteriology, Chemistry	North Amherst.
B.S.A., University of Toronto.	
Papendieck, Hans. ² Agronomy	Koenigsberg, Germany
D.Sc., University of Koenigsberg, Germany.	
Parrott, Ernest Milford. ¹ ² Chemistry, Bacteriology and Physiology	Cordova, Tenn.
B.S., Union University, Jackson, Tenn.	
Parsons, Clarence Howard. ¹ Animal Husbandry, Agronomy	Amherst.
B.S., Massachusetts State College.	
Parsons, Josiah W., Jr. ¹ Landscape Architecture	Northampton.
B.S., Massachusetts State College.	
Phealan, Katharine May. ² Agl. Education	Athol.
A.B., Smith College.	
Philbrook, Wayne M. ² Agl. Education, Psychology	Buda, Ill.
B.R.E., Boston University, S. R. E.	
Phinney, William Roland. ¹ ² Agl. Education	Amherst.
B.S., Massachusetts State College.	
Pottala, Arne Eric. ² Agl. Education	Fitchburg.
B.S., Massachusetts State College.	
Pray, Francis Cville. ¹ ² ³ Agl. Education	Amherst.
B.S., Massachusetts State College.	
Prentiss, Marden. ¹ Agl. Education, Mathematics and Physics	North Brookfield.
B.S., Connecticut Agricultural College.	
Pyle, Arthur Guard. ¹ Agl. Education	Plymouth.
B.S., Massachusetts State College.	
Quirk, John Matthew. ² Agl. Education	Springfield.
B.S., Middlebury College.	
Rea, Julian Stuart. ¹	Inhambane, P. E.
B.S., Massachusetts State College.	Africa.
Redmon, Bryan Collins. ¹ ² Chemistry	Paris, Ky.
B.S., University of Kentucky.	
Reed, Florence M. ² Agl. Education	Hadley.
B.A., Mt. Holyoke College.	
Reed, James Philip. ² Agl. Education, Sociology	Hadley.
B.S., University of Vermont	
Reed, Roland E. ¹	Easthampton.
B.S., Massachusetts State College.	
Regan, John Michael. ² Agl. Education, English	Holyoke.
A.B., Brown University.	
Rice, Cecil Curtis. ¹ ² Horticulture, Economics, Chemistry	Worcester.
B.S., Massachusetts State College.	
Rice, Roy Clifford. ² Chemistry, Mathematics and Physics	Wilbraham.
B.S., University of New Mexico.	
Rivnay, Ezekiel. ¹ Entomology, Botany	Rikhron, Palestine.
B.S., M.S., Massachusetts State College.	
Roberts, Margaret. ²	East Boston.
B.S. in Ed., Boston University.	
Ross, Adelaide R. ²	West Roxbury.
B.S. in Ed., Teachers College, Boston.	
Sacco, Ernest Thomas. ² Chemistry, Physics, Psychology	East Boston.
B.S., Boston College.	
Sanctuary, William Crocker. ¹ Agl. Economics, Agl. Education	Amherst.
B.S., Massachusetts State College.	
Saraceni, Raphael. ² Landscape Architecture	Lynn.
B.S., Massachusetts State College.	
Scanlon, Henry James. ² Agl. Education, Agl. Economics	Holyoke.
A.B., Holy Cross College.	
Shepard, Harold H. ¹ Entomology, Zoology, Chemistry	Takoma Park, Md.
B.S., Massachusetts State College.	
M.S., University of Maryland.	
Shylo, John. ² Poultry Science, Chemistry	Boston.
Ag. Eng., The Ukrainian Agricultural College of Czechoslovakia	
Simonette, Leon S. ² Landscape Architecture, Poultry Science	Ware.
A.B., Dickinson College.	
M.A., Columbia University.	
Smart, Harold William. ¹ ² Sociology, Agl. Education	Amherst.
LL.B., Boston University.	
A.B., Amherst College.	
Smith, Robert Henry. ² Chemistry	Hopedale.
B.S., Bowdoin College.	
Smyth, Roberta Beebe. ² Agl. Education	Springfield.
B.A., Mt. Holyoke College.	
Spaulding, Lucian Bayard. ² Chemistry, Bacteriology and Physiology	Madison, Ind.
A.B., De Pauw University.	
Spear, Rachel F. ² Horticulture, Floriculture	South Hadley.
B.A., Mt. Holyoke College.	
Stanisewski, Leon. ² ³ Agl. Education	Amherst.
B.S., Massachusetts State College.	
Stanisewski, Peter F. ² Agl. Education, English	Amherst.
A.B., Syracuse University.	
Stiles, Alice Goodrich. ¹ ² Bacteriology and Physiology, Chemistry	Westfield.
B.S., Massachusetts State College.	
Strickland, John Valentine. ¹ ² Poultry Science, Agl. Economics, Agronomy	Byhalia, Miss.
A.B., Rust College.	
Stuart, William Millan. ¹ Agronomy, Chemistry, Botany	Washington, Va.
B.S., Virginia Polytechnic Institute.	
Sullivan, John Ayer. ¹ ² Agl. Education, Veterinary Science, Botany	Medford.
B.S., Massachusetts State College.	
Sullivan, William Nicholas, Jr. ¹ Entomology, Botany	Lawrence.
B.S., Massachusetts State College.	
Tague, Ada Weaverling. ²	Amherst.
B.S., Iowa State College.	

Tarlow, Marc. ³ Agl. Education	Amherst.
B.S., Tufts College.	
M.A., Harvard College.	
Thatcher, Christine Belle. ^{1 2 3} Agl. Education, Bacteriology	Cummington.
B.S., Massachusetts State College.	
Thelin, Guy. ¹ Agronomy, Botany	Sioux Falls, S. D.
B.S., South Dakota State College.	
Thigpen, James Edwin. ³ Agl. Economics, Mathematics	Tarboro, N. C.
B.S., Connecticut Agricultural College.	
Tiffany, Don Cecil. ¹	Cambridge.
B.S., Massachusetts State College.	
Van Arendonk, Arthur M. ¹ Chemistry	Wallkill, N. Y.
A.B., Hope College (Holland, Mich.).	
Van Veghten, Grant Bernard. ^{1 3} Botany, Chemistry	Rochester, N. Y.
B.S., Cornell University.	
Weeks, Mildred A. ^{1 3} Agl. Education	South Gardner.
A.B., Radcliffe College.	
White, Harold James. ^{1 3} Bacteriology, Chemistry	Brighton.
B.S., Massachusetts State College.	
Williams, Forrest Earl. ^{1 2 3} Agl. Education, Sociology, Bacteriology	Agawam.
B.S., Massachusetts State College.	
Williams, Inez Wilhelmena. ^{1 3} Entomology, Botany	Brockton.
B.S., Massachusetts State College.	
Williams, Ruth Bugbee. ²	Agawam.
A.B., Smith College.	
Woods, James Joseph, Jr. ² Agl. Education, English	Leominster.
B.S., Massachusetts State College.	
Wright, Kenneth Edwin. ¹	Amherst.
B.S., University of Illinois.	

SUMMARY GRADUATE STUDENTS.

	Men.	Women.	Total.
Enrolled during academic year 1930-31	84	15	99
Enrolled in Summer School, 1931	38	18	56
Enrolled during academic year 1931-32	82	23	105
Total excluding duplications	155	41	196

UNDERGRADUATE STUDENTS.

CLASS OF 1932.

Anderson, Carrolle Elizabeth	Ashfield.
Astore, John Joseph	Kappa Epsilon.
Baker, Walter Connor	Q. T. V.
Batstone, William Frank	Theta Chi.
Bishop, Herbert Lorimer	30 Fearing Street.
Black, Mary Egesta	8 Allen Street.
Boland, Katherine	Adams House.
Boston, Margaret Mary	Adams House.
Bunten, John Frederick	Kappa Sigma.
Burns, Theodore Chandler	88 Pleasant Street.
Burrington, John Cecil	Phi Sigma Kappa.
Caird, Wynne Eleanor	Adams House.
Carter, Forrest Edward	R.F.D., Route 3, Box 77.
Chapman, Kenneth William	82 Pleasant Street.
Chase, Herbert Manton, Jr.	Kappa Sigma.
Cheney, Howard Alton	Kappa Sigma.
Church, Gertrude Barber	North Amherst.
Clark, Newell Lloyd	Theta Chi.
Clark, Webster Kimball, Jr.	Q. T. V.
Cone, John Paine	5 Kendrick Place.
Connell, Philip Joseph	Sigma Phi Epsilon.
Davis, William Proud	Lambda Chi Alpha.
DeGelleke, Peter	15 Phillips Street.
Delisle, Albert Lorenzo	453 Newton Street, South Hadley Falls.
Dickinson, Thelma Louise	Adams House.
Donaghy, Edward Joseph	Kappa Epsilon.
Doyle, James Edward	Kappa Epsilon.
Edmond, Stuart Deane	8 South Prospect Street.
Eldredge, Josephine	Adams House.
Fabyan, Warren White	Q. T. V.
Fiore, Celeste	Adams House.
Fisher, William Sidney, Jr.	13 South College.
Fletcher, Robert Bliss	Theta Chi.
Foley, John Joseph	Kappa Sigma.
Folger, Richard Sloane	Kappa Sigma.
Fontaine, Arthur Lewis	Sigma Phi Epsilon.
Forest, Herbert Leon	Colonial Inn.
Foskett, Clifford Robert. ¹	Q. T. V.
Gagliarducci, Vincent Nicholas	South College.
Goodall, Leslie Duncan	56 Pleasant Street.
Goodwin, Azor Orne	Kappa Epsilon.
Gordon, Laura Elizabeth	Adams House.
	Ipswich.

¹ Candidate for Degree of Bachelor of Vocational Agriculture.

Greene, William Capewell	Middlebury, Conn.	Davenport Inn.
Guinness, Robert Charles	Amherst	105 Butterfield Avenue.
Hale, Kenneth Fowler	Tolland	Sigma Phi Epsilon.
Hanslick, Otis Henry	Somerville	10 McClellan Street.
Haynes, Arnold Calvin	Springfield	Phi Sigma Kappa.
Hickney, Zoe Edwina	Andover	70 Lincoln Avenue.
Hitchcock, John David	West Medway	42 Lincoln Avenue.
Hodge, Kenneth Elba	Monson	83 Pleasant Street.
Holder, Eben Daniel	Hudson	Q. T. V.
Holmberg, Oscar Edward	Waltham	83 Pleasant Street.
Holz, Henry	North Andover	Alpha Gamma Rho.
Howe, Elizabeth Vose	South Acton	Adams House.
Howlett, Carey Harris	Southampton	West Experiment Station.
Hunter, Marion Brockway	Holyoke	The Homestead.
Izzi, Emil	South Barre	Kappa Epsilon.
Johnson, Catharine Genevieve	Amherst	Eames Avenue.
Johnson, William Anders	Haverhill	Mt. Pleasant, care of Prof. Thayer.
Jorczak, Joseph Stanley	Chicopee	Q. T. V.
Kane, Eugene	Westfield	Q. T. V.
Kaylor, John Daniel	Fall River	Inwood.
Keyes, Curtis Gilbert	Whitinsville	French Hall.
Killeen, John Bernard, Jr.	Cambridge	81 Pleasant Street.
Lake, Susan Glidden	Avon	The Homestead.
Lawrence, Edwina Frances	Springfield	Adams House.
Lepie, Joseph Edward	Dorchester	Delta Phi Alpha.
Libbey, William Clinton	Westboro	The Apiary.
Loomer, Edward Alfred	Abington	Kappa Sigma.
MacLean, John Douglas	West Bridgewater	Stockbridge Hall.
Mamaqui, Nusret Osman	Albania	West Experiment Station.
Margolin, Oscar	Newtonville	7 Phillips Street.
Markus, Christine Veronica	Monson	Adams House.
Mason, Donald Mowatt	South Easton	83 Pleasant Street.
McChesney, Herbert Lewis	West Springfield	Kappa Sigma.
Merritt, Orris Elma	Sheffield	Adams House.
Merritt, Richard Hyde	Williamsburg	Lambda Chi Alpha
Miller, Frank Edward, Jr.	Lynn	Fernald Hall.
Mitchell, Ernest Wilson, Jr.	Newburyport	Kappa Sigma.
Morrison, Florence Lee	Williamstown	Adams House.
Nelson, Harmon Oscar, Jr.	Whitinsville	Phi Sigma Kappa.
Nourse, Arthur Lesure	Westboro	83 Pleasant Street.
O'Donnell, Patrick Edward	North Abington	Kappa Sigma.
Ohlweiler, Margaret Amelia	Southbridge	The Homestead.
Parsons, Anna Thankful	Southampton	Adams House.
Pineo, Victor Clifton	Mt. Tom	15 East St., Mt. Tom.
Pollard, Robert Lonsdale	Amherst	116 Pleasant Street.
Pollin, Lillian Pauline	Springfield	The Homestead.
Potter, Rial Strickland, Jr.	Springfield	Sigma Phi Epsilon.
Powers, John Joseph	South Sudbury	30 Fearing Street.
Prince, Carlton Gordon	Adams	10 Nutting Avenue.
Reed, Elizabeth Ruth	Dalton	Adams House.
Rice, Clara Ruth	Charlemont	Adams House.
Roffey, Robert Cameron	Rockport	Alpha Sigma Phi.
Ross, Paul Howard	Waltham	Theta Chi.
Salisbury, Alston Moore	Melrose Highlands	Alpha Gamma Rho.
Salter, Leonard Austin, Jr.	Springfield	Lambda Chi Alpha.
Smith, Aleck	Everett	Delta Phi Alpha.
Smith, George Gilman	Lebanon, N. H.	Alpha Gamma Rho.
Springer, Frank Leslie	Arlington	Stockbridge Hall.
Stuart, Wallace Wyman	Littleton Common	66 Lincoln Avenue.
Sylvester, George Stull	Glen Rock, N. J.	Phi Sigma Kappa.
Taylor, Avis Ruth	Dedham	Adams House.
Taylor, Clarisse Marie	Lee	Adams House.
Tetro, Robert Carl	Williamsburg	Alpha Gamma Rho.
Thompson, Elmer Joseph	Brookline	Kappa Sigma.
Tikofski, John William	Walpole	Baker Lane, care of Mrs. Webb.
Tippo, Oswald	Jamaica Plain	Box 36, North Amherst, care of Mrs. Shampo.
Towle, Gifford Hoag	Holden	Hatch Experiment Station.
True, Henry Harriman	Haverhill	4 Cosby Avenue.
Twiss, Mildred Florence	Hudson	Adams House.
Uteley, Walter Sampson	Chesterfield	97 Pleasant Street.
Van Leer, Hans Lodewijk	Hilversum, Holland	Sigma Phi Epsilon.
Voorneveld, William, Jr.	Nantucket	Kappa Sigma.
Wanegar, Melvin Harold	Montague City	Baker Lane, care of Mrs. Webb.
Warner, Lulu Harriet	Amherst	Shays Street.
Warren, Philip Wallis	West Auburn	Lambda Chi Alpha.
Waskiewicz, Edward Julian	Three Rivers	Q. T. V.
Watson, Edward Winslow	Plymouth	Phi Sigma Kappa.
Wear, William Homer	Waltham	Mt. Pleasant, care of Prof. Thayer.
Webb, Pauline Alice	Goshen	Adams House.
Welch, Frederick Joseph	Rockland	Alpha Sigma Phi.
Wendell, Charles Butler, Jr.	Lexington	Phi Sigma Kappa.
Wetterlow, Eric Hilding, Jr.	Manchester	Phi Sigma Kappa.
Wheeler, Kenneth Monroe	Great Barrington	Stockbridge Hall.
Whitten, Gilbert Yould	Melrose	Lambda Chi Alpha.
Wilson, James Louis	Ashland.	Colonial Inn.

CLASS OF 1933.

Adams, Lucile Elizabeth	East Lee	Adams House.
Ahlstrom, Clifton Nils	Quincy	94 Pleasant Street.
Aldrich, George Elliot	Northampton	Pine Street, No. Amherst.
Anderson, Alice Gunhild	Everett	Adams House.
Anderson, Mabelle Lydia	Southwick	Adams House.
Armstrong, Irene Elizabeth	East Sandwich	Adams House.
Asquith, Dean	Lowell	Theta Chi.
Barnes, Gertrude Agnes	Richmond	Adams House.
Barr, John Butler	Lowell	81 Pleasant Street.
Barter, John Chaffer	Shrewsbury	81 Pleasant Street.
Bearse, Arthur Everett	Sharon	Lambda Chi Alpha.
Bedord, Wilfred Hugh	Monson	8 Nutting Avenue.
Beeler, Nelson Frederick	Adams	Phi Sigma Kappa.
Beeman, Evelyn Elizabeth	Ware	Adams House.
Bell, Burton Brainard	Addison, Conn.	Theta Chi.
Benjamin, Doris Beulah	Ashfield	Adams House.
Best, Dorothy Gertrude	Holyoke	Adams House.
Betts, Benjamin Davenport	Norwalk, Conn.	Sigma Phi Epsilon.
Bickford, Ralph Henry	Cheshire	Phi Sigma Kappa.
Brown, Chester Cromwell	Wayland	Phi Sigma Kappa.
Bulman, James Cornelius	Greenfield	Alpha Sigma Phi.
Caragianis, Costas Louis	Dracut	Sigma Phi Epsilon.
Cary, Marjorie Elizabeth	Lyonsville	Adams House.
Chenoweth, Howard Whitten	North Amherst	North Amherst.
Clancy, Carl Francis	Dedham	Phi Sigma Kappa.
Clark, Charles Edward	Bedford	Q. T. V.
Cooley, Laura Grace	Sunderland	The Homestead.
Crawford, Forrest Emerson	Belmont	97 Pleasant Street.
Crowell, John Brewer	Boonton, N. J.	15 Phillips Street.
Cummings, Benton Pierce	Ware	19 North College.
Dechter, Joseph Maxwell	Chelsea	Delta Phi Alpha.
Dods, Agnes Miriam	Leverett	Montague.
Dyar, George Wellington	Waltham	Stockbridge Hall.
Eldridge, Richard Albert	South Chatham	Alpha Sigma Phi.
Fawcett, Edward Gilbert	Amherst	Kappa Sigma.
Flavin, Edward Michael	Greenfield	Alpha Sigma Phi.
Fowler, John Malcolm	West Newton	Kappa Sigma.
Gallup, Edward Louis	Norfolk	Theta Chi.
Garity, Agnes Elinor	Boston	Draper Hall.
Gerrard, Margaret Lawrence	Holyoke	Adams House.
Gilmore, Samuel Rand	Wrentham	Lambda Chi Alpha.
Gleason, Cloyes Tilden	Hanover	Kappa Sigma.
Goodell, Bertram Cheney	Southbridge	Kappa Epsilon.
Griffin, Katherine Patricia	Holyoke	Adams House.
Guralnick, Eugene Abraham	Roxbury	Delta Phi Alpha.
Gurney, Ashley Buell	Cummington	10 Nutting Avenue.
Hager, William Perry	South Deerfield	Sigma Phi Epsilon.
Hale, Nathan Shirley ¹	Rowley	Alpha Gamma Rho.
Hammond, Richard Clayton	Quincy	94 Pleasant Street.
Hanson, Robert	Waltham	Lambda Chi Alpha.
Harvey, Edward Winslow	Amherst	Kappa Sigma.
Hicks, Murray Ballou	Springfield	Alpha Gamma Rho.
Hodsdon, George Edward, Jr.	Gloucester	Phi Sigma Kappa.
Hosford, Robert Stanley	Springfield	Lambda Chi Alpha.
Houran, Gordon Andrew	Ashburnham	Lambda Chi Alpha.
Hovey, Alan Edwin	Ludlow	Kappa Sigma.
Howes, Robert Milton	Swift River	Kappa Epsilon.
Hubbard, Catherine Newton	Sunderland	Adams House.
Isgur, Benjamin	Dorchester	East Experiment Station
Jahnle, Carl George	Winthrop	Sigma Phi Epsilon.
Johnson, Eunice Moore	Holden	Adams House.
Kane, Esther Marie	Holyoke	Adams House.
Karlson, Eric Richmond	Worcester	Lambda Chi Alpha.
Karlson, Josta Andrew	Worcester	Lambda Chi Alpha.
Klaucke, Elfriede	Worcester	Adams House.
Kovaleski, John Alexander	Westfield	Wildwood Cemetery Road
Kulash, Walter Michael	Haydenville	Alpha Gamma Rho.
Leary, Daniel Joseph	Turners Falls	Sigma Phi Epsilon.
Leverault, Philip Joseph	Williamansett	Sigma Phi Epsilon.
MacInn, Walter Arnold	Amesbury	Theta Chi.
Marchelewicz, Joseph Ludwik	Three Rivers	17 Phillips Street.
McMahon, Agnes Grimes	Brighton	Adams House.
McMahon, Margaret Cornelia	Brighton	22 Dana Street.
Miller, Charlotte Winifred	South Amherst	South Amherst.
Minarik, Charles Edwin	Westfield	Q. T. V.
Miner, Harold Edson, Jr.	Holyoke	Kappa Sigma.
Miner, Kenneth Carlyle	Groton, Conn.	45 Fearing Street.
Moody, Charles William	Pittsfield	Care of Prof. Sears.
Moody, George Deming	North Andover	57 Lincoln Avenue.
Munson, Janice	Amherst	101 Butterfield Terrace.
Murphy, Sarah Agnes	Dorchester	Adams House.
Nash, Edmond	Greenfield	Kappa Epsilon.
Nelson, Harold Richmond	Framingham	Kappa Sigma.
Oliver, Thomas Joseph	Gloucester	3 Cosby Avenue.
O'Mara, Joseph George	South Boston	Box 36, North Amherst.
Ordway, Alfreda Lucie	Hudson	Adams House.
Parker, Arthur Clough	Lynn	Theta Chi.
Pelissier, Raymond Francis	Hadley	Russell St., Hadley.

¹ Candidate for Degree of Bachelor of Vocational Agriculture.

Perkins, Isabel Roberts	Worcester	Adams House.
Pike, Anita Leigh	Dorchester	Adams House.
Polar, John	Acushnet	97 Pleasant Street.
Poole, Horace Lincoln	Lynn	Phi Sigma Kappa.
Powell, Townsend Henry	Brookfield	Theta Chi.
Priest, Arthur George	Windsor, Conn	Care of H. E. Whiting, So. Amherst.
Pruyne, Granville Sherman	Pittsfield	Kappa Sigma.
Riihimaki, Arthur Alexander	Quincy	15 Phillips Street.
Rowley, Richard Andrew	Holyoke	351 Chestnut St., Holyoke.
Rudman, Helen Howland	Agawam	Adams House.
Runge, Paul Martin	Norton	Lambda Chi Alpha.
Russell, Waldo Rufus	Townsend	Lambda Chi Alpha.
Ryan, John Bartlett, Jr.	Swampscott	6 Nutting Avenue.
Scott, Seymour Blois	Sharon	Kappa Sigma.
Semanie, William Michael	Springfield	250 Liberty St., Springfield.
Sheff, Joseph John	Turners Falls	Sigma Phi Epsilon.
Shepard, Sidney	Malden	Delta Phi Alpha.
Shuman, Harold	Dorchester	East Experiment Station.
Sisson, Parker Lincoln	Lynn	13 Phillips Street.
Smith, Robert Lee	Boston	56 Pleasant Street.
Smith, William Tyler	North Brookfield	Alpha Gamma Rho.
Snell, Eleanor Lazelle	Portland, Maine	Adams House.
Sorton, Edgar	South Hadley Falls	Mathematics Building.
Soule, Harold Leroy	West Bridgewater	Theta Chi.
Southwick, Lawrence	Leicester	Theta Chi.
Stefanides, George Fote	Boston	2 Dickinson Street.
Stephan, Philip Charles, Jr.	Brooklyn, N. Y.	Kappa Sigma.
Stewart, Malcolm Chamberlain	Needham	Kappa Sigma.
Sturtevant, Ralph Francis	Halifax	Kappa Epsilon.
Swartzwelder, John Clyde	East Lynn	Theta Chi.
Taft, Robert	Mendon	Phi Sigma Kappa.
Taylor, Fred Herbert	Groton	Theta Chi.
Taylor, Marion Ruth	Greenfield	Adams House.
Thompson, Edwin James ¹	Stoughton	Alpha Gamma Rho
Townsend, Eleanor	Worcester	Adams House.
Trow, Francis Gilman	Buckland	13 Hallowell Street.
Tyler, Stanley Warren	East Lynn	Alpha Sigma Phi.
Vogel, Ruth Marion	Holyoke	70 Lincoln Avenue.
Waite, Harold Montifore	Northampton	54 Lincoln Avenue.
Ward, Willard Raymond	Brookline	Hatch Experiment Station
Whitcomb, Richard Frank	Springfield, Vt.	Theta Chi.
White, Maurice Francis	Maynard	Lambda Chi Alpha.
Wilson, Sylvia Belle	Ware	Adams House.
Wood, Harold Spencer	Central Village	13 Phillips Street.

CLASS OF 1934.

Adams, Laura Elizabeth	Athol	Adams House.
Ainsworth, Gordon Ellery	Littleton, N. H.	Sugar Loaf St., So. Deer- field.
Alton, Herbert Roger	Webster	3 Cosby Avenue.
Barrett, Wilmer Dwight	West Bridgewater	Care of Mrs. Dillingham, Baker Place.
Barrus, Thomas Weeks	Lithia	Clark Hall.
Bartlett, Helen Elnora	Framingham	2 Farview Way.
Bates, Roger Gordon	Cummington	Kappa Epsilon.
Batstone, Frank Arthur, Jr.	West Newton	Theta Chi.
Becker, Roland Frederick	Lawrence	Hatch Barn.
Bennett, Stephen Wiggins ¹	Worcester	15 Fearing Street.
Bernstein, Harry	Everett	Delta Phi Alpha.
Bick, David Louis	Everett	Delta Phi Alpha.
Bigelow, George Harrison	Marlborough	Sigma Phi Epsilon.
Bingham, Leonard Joseph	North Andover	Alpha Sigma Phi.
Bourgeois, George Albert, III	Williamsburg	Inwood.
Bower, William Austin	North Andover	Kappa Sigma.
Bowler, Gerald Thomas	Westfield	Q. T. V.
Brackett, Muriel Viola	Marblehead	8 Allen Street.
Bresnick, Samuel	Revere	56 Pleasant Street.
Brown, Richard Mills	Springfield	56 Pleasant Street.
Brown, Thurl Dryden	Danvers	Alpha Gamma Rho.
Burke, Raymond Francis	Woronoco	Q. T. V.
Burr, Franklin Gilmore	Worthington	Lambda Chi Alpha.
Bush, Louis Joseph	Turners Falls	66 Lincoln Avenue.
Caird, David William	Dalton	Kappa Sigma
Call, Calvin Paterson	Colrain	Colrain.
Campbell, Ruth Dexter	Springfield	Adams House.
Cande, Elinor Sherman	Sheffield	Adams House.
Carl, Erma Marie	Holyoke	Adams House.
Casey, Charlotte Belcher	Easthampton	25 North Prospect Street.
Caswell, Carolyn Marieta	Shattuckville	Adams House.
Chapin, Norton Spencer	Swampscott	Lambda Chi Alpha.
Chase, Donald William	Haverhill	Eames Avenue.
Chase, Greenleaf Tucker	Newburyport	French Hall.
Chesbro, Wallace Lea	Osterville	27 Fearing Street.
Clark, Frederick Griswold	West Deerfield	3 Cosby Avenue.
Clark, Margaret Lydia	Greenfield	Adams House.
Clow, Edmund James	Orange	Lambda Chi Alpha.
Coburn, Joseph Lyman ¹	East Walpole	18 Nutting Avenue.
Coldwell, Raymond Dunham	Framingham	Hatch Barn.

¹ Candidate for Degree of Bachelor of Vocational Agriculture.

Cole, Kendrick McDowell	Needham	35 Lincoln Avenue.
Cole, Randall Knight	West Medway	Alpha Gamma Rho.
Coleman, Robert Taylor	Boston	35 Lincoln Avenue.
Cook, Elizabeth Addie	Shrewsbury	Adams House.
Cook, Frances Lora	Waltham	Adams House.
Cooke, Theodore Frederic, Jr.	Richmond	Alpha Sigma Phi.
Coombs, Charles Edwin	Holyoke	83 Pleasant Street.
Cosgriff, David Edward	Springfield	Sigma Phi Epsilon.
Costa, Flory Gloria	North Agawam	Adams House.
Cowing, Roy Tapley	West Springfield	Alpha Sigma Phi.
Crean, Margaret Patricia	Turners Falls	168 Montague City Road, Turners Falls.
Crosby, David	Wakefield	R. F. D. 3, Box 77.
Cummings, Herbert Vincent	Ware	1 Pleasant Street.
Cutler, Roland Rogers, Jr.	South Sudbury	3 Cosby Avenue.
Cutler, Richard Thompson	South Sudbury	3 Cosby Avenue.
Dance, Darrell Alderson	Windsor, Conn.	83 Pleasant Street.
Daniels, Douglas Gordon	Reading	84 Pleasant Street.
Denmark, Hyman Samuel	Holyoke	77 St. James Ave., Holyoke
Dexter, Ralph Warren	Gloucester	Davenport Inn.
Dressel, Alice Katherine	Granby	Granby.
Duckering, Florence Augusta	Dorchester	Adams House.
Dunham, Wilmot Grant	Centerville	Alpha Gamma Rho.
Dunphy, Charles Henry	Palmer	Lambda Chi Alpha.
Durell, William Donald	Attleboro	Theta Chi.
Edney, James Palmer	South Acton	35 Lincoln Avenue.
Einbinder, Celia Harriet	Holyoke	Adams House.
Ellis, Catherine MacInnis	East Brewster	Adams House.
Entwistle, Charles Clifford	Mendon	Colonial Inn.
Esselen, William Brigham, Jr.	Millis	Q. T. V.
Farrar, John Biggs	South Lincoln	7 Phillips Street.
Fisher, Josephine Frances	Boston	Adams House.
Flynn, James Henry	Easthampton	129 Park St., Easthampton.
Forer, Ida	Holyoke	658 Bridge St., Holyoke.
Freedman, Alexander Harvey	Dorchester	32 North Prospect Street.
French, Chester Leroy	Greenfield	Sigma Phi Epsilon.
French, Marjorie Louise	Somerville	Adams House.
Frigard, Wilho	Maynard	Lambda Chi Alpha.
Gagnon, Russell Thomas	Gloucester	Alpha Sigma Phi.
Gardner, Ruth Amy	Island Pond, Vt.	Care of Mrs. Oleson, North Amherst.
Gerrard, Barbara Kimball	Holyoke	42 Lawler St., Holyoke.
Gertz, Max Benjamin	Everett	Delta Phi Alpha.
Gilbert, Vincent Cooper	Belmont	Theta Chi.
Ginsburgh, Irene Rebecca	Holyoke	229 Chestnut St., Holyoke
Goodstein, William Victor	Everett	19 Pleasant Street.
Gordon, Irwin Francis	Mattapan	84 Pleasant Street.
Green, Arthur Allerton	Windsor, Conn.	Care of Mr. Lanphear, Farview Way.
Griswold, Norman Bulkeley	Hartford, Conn.	Sigma Phi Epsilon.
Hager, Fanny Abigail	South Deerfield	113 Main Street.
Harvey, Verne	Amherst	120 West Street.
Hast, Lillian Hannah	Worcester	6 Allen Street.
Haukelid, Knut Anders	Norway	Theta Chi.
Healey, Elsie Elizabeth	Lee	Adams House.
Henry, Ralph Joseph	Methuen	50 Sunset Avenue.
Herbert, Charles Reitz	Quincy	46 Pleasant Street.
Hiland, Page Livingston	Great Barrington	Lambda Chi Alpha.
Hill, Nathaniel Bartram	Amherst	Farm House.
Hillberg, Pauline Louise	Pittsfield	Adams House.
Hoagland, Descom DeForest	Waltham	Alpha Gamma Rho
Hodgen, Alden Reginald	Hubbardston	Davenport Inn.
Hoffman, Archie Arthur	Boston	56 Pleasant Street.
Hornbaker, Robert Weeks	Worcester	Theta Chi.
Hurwitz, Charles	Springfield	4 Hallock Street.
Jackson, Harriette Morgan	Orange	Adams House.
Jackson, Robert Crompton	New Bedford	Kappa Epsilon
Jenkins, Herbert	Methuen	35 Lincoln Avenue
Jensen, Marjorie Ann	Worcester	Adams House.
Kibbe, Milton Homer	West Springfield	Alpha Sigma Phi.
Klar, James Shepard	Springfield	Theta Chi.
Kozlowski, William	Lynn	6 Nutting Avenue.
Krumpholtz, Frank Harold	Easthampton	19 Water Street, East- hampton.
Kucinski, Karol Joseph	Amherst	15 North East Street.
Landsman, Eliot	Dorchester	Delta Phi Alpha.
LeClair, Charles Alonzo	Amherst	10 Hallock Street.
Levy, Arnold James	Taunton	86 Pleasant Street.
Lincoln, Stephen Albert	Oakham	Phi Sigma Kappa.
Lister, William Seaton, Jr.	Stoneham	18 Nutting Avenue.
Lockhart, Janet Martha	Greenfield	70 Montague City Road, Greenfield.
Lojko, Joseph	Northampton	13 Warfield Place, North- ampton.
Lucey, Alexander Ambrose, Jr.	Medford	45 Fearing Street
MacCleary, Russell Eldridge	Winthrop	51 Amity Street.
MacDonald, Kathleen Jane	Greenfield	Adams House.
Mackimmie, James Paige	North Amherst	North Amherst.
MacMackin, Carleton Archie	Lancaster	Alpha Gamma Rho.

¹ Candidate for Degree of Bachelor of Vocational Agriculture.

Magay, Robert Andrew	Worcester	Theta Chi
McCarthy, Shirley Elizabeth	Greenfield	Box 475, Amherst
McGuckian, Ambrose Thomas	Rosindale	Q. T. V.
Merrill, Arthur Carlton, Jr.	Rockport	College Apiary
Merrill, James Willis	South Hadley Falls	179 Willimansett Street, South Hadley Falls
Merritt, Helen Bartlett	Sheffield	Adams House
Mountain, David Charles	Pittsfield	83 Pleasant Street
Natti, Ilmar	Gloucester	31 North Prospect Street
Newton, Aaron Wayne	East Northfield	Alpha Sigma Phi
Nichols, Nathan Paddock	Montpelier, Vt.	Kappa Sigma
Nisbet, Fred Jouett	Rosindale	6 Nutting Avenue
Noble, Robert Gillette	Florence	Phi Sigma Kappa
O'Neil, Cornelius Francis	Northampton	2 Warfield Place, North- ampton
Papp, Walter Louis	North Falmouth	13 Phillips Street
Peaslee, Sarah Augusta	Worcester	Adams House
Politella, Joseph	Lawrence	Davenport Inn
Pollock, Leo Herman	Chelsea	30 Cottage Street
Potter, Harold Carpenter	Greenfield	Sigma Phi Epsilon
Powers, Helen Louise	Hadley	41 Russell Street, Hadley
Pozzi, John Frank	North Adams	Sigma Phi Epsilon
Pusher, Ruth	North Amherst	North Amherst
Pyenson, Harry	East Lee	Delta Phi Alpha
Reynolds, James Norris	Agawam	Alpha Sigma Phi
Robbins, Burns Richard	Boston	9 Fearing Street
Robertson, James Walter, Jr.	Boston	Box 36, North Amherst
Rogers, Mark Henry	West Newbury	7 Phillips Street
Rowland, Laura Elizabeth	Springfield	Adams House
Royal, Raymond Edward	Adams	33 Lincoln Avenue
Russell, Nancy Elizabeth	Springfield	Adams House
Ryan, Alvan Sherman	Needham Heights	Lambda Chi Alpha
Sabeau, Harold Cleveland	Peabody	Lambda Chi Alpha
Schaffner, Paul Webster	Dover	French Hall
Schenck, Wolcott Lawrence	Longmeadow	Lambda Chi Alpha
Scott, Marion Cornelia	Bloomfield, Conn.	Adams House
Seperski, Stanley Francis	East Pepperell	Q. T. V.
Shea, John Joseph	Turners Falls	Sigma Phi Epsilon
Sherman, Albert	Stoneham	30 Cottage Street
Sibson, James Albert	Milford	Kappa Sigma
Sievers, Howard Ralph	Amherst	East Pleasant Street
Simmons, Gladys Josephine	Pittsfield	Adams House
Skipton, Alberta Elizabeth	Springfield	Adams House
Smiaroski, Joseph Nieckoski	Deerfield	66 Lincoln Avenue
Smith, Donald Hartwell	South Berlin	French Hall
Smith, Edith Janette	State Line	Adams House
Snow, Russell Linnell	Arlington	President's House
Solomon, Barnett	Malden	84 Pleasant Street
Southworth, Warren Hilbourne	Lynn	6 Nutting Avenue
Spencer, Elwood	El Paso, Texas	84 Pleasant Street
Steffek, Edwin Francis	Westfield	42 McClellan Street
Stockbridge, Robert Reed ¹	Worcester	72 Lincoln Avenue
Stoerber, Florence Pauline	Adams	Adams House
Sturtevant, Russell	Halifax	Kappa Epsilon
Taft, Russell Eugene	Greenfield	18 Nutting Avenue
Talbot, Edward James	Springfield	Sigma Phi Epsilon
Taylor, Elizabeth Alton	Holyoke	Adams House
Taylor, Mary Isabelle	Groton	Adams House
Thomas, Winthrop Snowdon	West Newton	35 Lincoln Avenue
Thompson, Walter Earl	Holyoke	Alpha Sigma Phi
Thompson, Wallace Wetherell	Worcester	Theta Chi
Tiffany, Grace Elizabeth	Holyoke	45 Calumet Road, Holyoke
Tomlinson, Mary Arundale	West Newton	Adams House
Walker, Henry Atchinson	Southbridge	Alpha Gamma Rho
Watson, Vernon Kenneth	Amherst	5 East Pleasant Street
Weinberger, Benjamin	Dorchester	Delta Phi Alpha
Wheeler, Elizabeth	Worcester	Adams House
Wheeler, Nelson Adrian	Holyoke	6 Phillips Street
Wilcox, Joan Elizabeth	Jamaica Plain	Adams House
Winokur, Harry	Dorchester	86 Pleasant Street
Woodbury, Frances	Malden	Adams House
Wyman, Edward Rochford	Turners Falls	6 Phillips Street
Zielinski, Joseph Francis	Holyoke	83 Pleasant Street
Zillman, Joseph Frank	Dorchester	Delta Phi Alpha

CLASS OF 1935.

Abbott, Robert West	Falmouth	North College
Alderman, William Harris	Holyoke	4 Cosby Avenue
Alger, Marion Kirkland	Greenfield	70 Lincoln Avenue
Allen, Mary Louise	Greenfield	Adams House
Allen, Robert John	Worcester	South College
Andrews, Frederick Newcomb ¹	South Weymouth	South College
Arenberg, David Lewis	Rochester	South College
Arenberg, Isaac Moses	Rochester	South College
Arnold, Stuart Aborn	Rehoboth	North College
Ashley, Madelyn Gertrude	Greenfield	8 Allen Street
Bacon, Harold Stockbridge	Frammingham	South College
Bailey, John Lewis	Kingston	44 Triangle Street

¹ Candidate for the Degree of Bachelor of Vocational Agriculture.

Baker, Ernest	Brazil, Indiana	84 Pleasant Street.
Barr, Iona Elizabeth	Greenfield	8 Allen Street.
Bartlett, Dorothy Eleanor	Chicopee Falls	North Amherst, care of Mrs. A. F. Taylor.
Bean, Pearl Emerald	Agawam	Adams House.
Bearse, Carleton Everett	Sharon	81 Pleasant Street.
Beebe, Helen Elizabeth	Monson	Adams House.
Beeman, Rachel Phebe	Ware	21 Lincoln Avenue.
Bennett, John Wesley	Northfield	North College.
Bernstein, Anna Judyth	Greenfield	Draper Hall.
Bertorelli, Ollie Leonard	Milford	South College.
Bingham, Laura	Athol	Adams House.
Blackburn, James William	Springfield	South College.
Blackburn, Roger Tait	Stoneham	18 Nutting Avenue.
Blake, Lamont Vincent	Springfield	83 Pleasant Street.
Blatchford, Ethel Winifred	Attleboro	8 Allen Street.
Bliss, Sheldon Pratt	Greenfield	North College.
Bodman, William Walter	Agawam	North Amherst Road, care of Mrs. Carey.
Bonzogni, Columbus Charles	West Springfield	9 Phillips Street.
Boynton, Willard Harold	Groveland	South College.
Bozian, George	Fall River	South College.
Bradford, Alice Frances	Kingston	8 Allen Street.
Bray, Robert Story	Gloucester	45 Fearing Street.
Brayden, Walter Edward	Maynard	10 Nutting Avenue.
Brenna, Frank George	Milford	South College.
Brennan, Mary Teresa	Ipswich	22 Dana Street.
Brooks, Marion Emily	Worcester	North Amherst, care of Mrs. E. B. Hobart.
Brown, William Clay	Winchester	North College.
Brune, Gunnar Magnus	Pittsfield	North College.
Burgess, Albert Franklin	Greenfield	North College.
Burke, Francis Campbell	Clinton	North College.
Cance, Edmond Leland	Stanley, Wis.	9 Fearing Street.
Caron, Francis Leo	North Adams	South College.
Carr, Lawrence Booth	Revere	North College.
Casey, Joseph Jaquith	Billerica	North College.
Caverly, Lorraine Marcia	Haverhill	Adams House.
Clark, Curtis Mason	Millis	North College.
Clark, Lester Wilbur	Montague	Montague.
Clark, Philip Hartshorn	Waltham	South College.
Cleary, Joseph George	New London, Conn.	North College.
Cohen, Ralph Sabin	Dorchester	84 Pleasant Street.
Colman, John Pickhardt	Boston	North College.
Colson, Alma Hough	North Agawam	Adams House.
Conary, Warren Preston	Braintree	28 Pleasant Street.
Cone, William Howard	East Orange, N. J.	North College.
Congdon, George Steadman	Millis	North College.
Connery, Ellen Rose	Easthampton	6 Allen Street.
Connolly, Helen Margaret	Hadley	East St., Hadley.
Consolatti, John Joseph	Lee	31 North Prospect Street
Cook, Dorothy Flora	Amherst	R. F. D. No. 1, Amherst.
Corcoran, Hugh Joseph	Westfield	North College.
Cox, Alfred Elmer, 3d	Bridgewater	27 Fearing Street.
Cox, Kenneth Mackenzie	West Springfield	North College.
Crabtree, Anita	Gardner	North Amherst, care Mrs E. B. Hobart.
Crosse, Chester Ellsworth	Onset	South College.
Cumming, Roderick Wells	Bristol, Conn.	North College.
Currier, Marie Eleanor	Amesbury	North Amherst, care of Mrs. H. R. Hobart.
Curtis, George Edmund	Taunton	21 Woodside Avenue.
Daland, Lois Mansfield	Wakefield	Adams House.
Daniels, Charles Howard	Melrose	14 Kellogg Avenue.
Davis, Myron Carl	Stafford Springs, Conn.	97 Pleasant Street.
Daze, Rheel Edward	Williamansett	46 John St., Williamansett.
Dearden, Amy	Palmer	North Amherst, care of Mrs. A. F. Taylor.
Dec, Mary Nellie	Hadley	Hadley.
Dempsey, Albert William	Huntington	North College.
Dennis, Gordon Bowman	Framingham	4 Hallowell Street.
DiMarzio, Raymond	North Plymouth	South College.
Dimock, Catharine Elizabeth	Longmeadow	North Amherst, care of Mrs. A. F. Taylor.
Dobbie, Howard Ralph	Haverhill	13 Hallowell Street.
Dolan, Bernice Jo-Ann	Turners Falls	20 Maple St., Turners Falls.
Donaldson, Marilyn Arberta	North Agawam	North Amherst, care of Mrs. H. R. Hobart.
Doyle, Bernard Joseph	Northampton	North College.
Dubie, Ralph Peter	Turners Falls	42 McClellan Street.
Dubin, Max	Malden	56 Pleasant Street.
Durham, Gladys Alice	Ipswich	22 Fearing Street.
Dwight, Alice Isabel	Griswoldville	Adams House.
Dworman, Joseph Aaron	Worcester	35 Lincoln Avenue.
Eaton, Frank Warren	Waltham	North College.
Elder, Henry Holton	Mount Hermon	South College.
Eldridge, John Crosby	West Bridgewater	86 Pleasant Street.
Epstein, Henry David	Brookline	North Pleasant Street, care of Mrs. Howard.
Evans, John Robert	Arlington	North College.

Evans, Raymond Knightly	Easthampton	30 Center Street, Easthampton.
Fach, Winifred Dorothea	Bernardston	Adams House.
Farrand, Marion Lloyd	Worcester	Mount Pleasant, care of Mrs. France.
Fay, Florence Chesson	Chicopee Falls	North Amherst, care of Mrs. A. F. Taylor.
Feinberg, Abraham	Dorchester	South College.
Fisher, Ernest Brayton, Jr.	Walpole	North College.
FitzGerald, Dorothy Elizabeth	Belchertown	15 Knight Avenue, Easthampton.
Flack, Erna Martha	Northampton	Adams House.
Fletcher, Everett Howard	Baldwin, L. I., N. Y.	Kappa Sigma.
Foley, Cornelia Frances	Amherst	Adams House.
Foley, Daniel Joseph	Salem	12 Chestnut Street.
Fowler, Charles Bostwick	West Newton	83 Pleasant Street.
Foxhall, William Bex	Shrewsbury	97 Pleasant Street.
Frey, Christine Louise	South Hadley Falls	9 Prospect St., South Hadley Falls.
Friedrich, Lois Florence	Florence	46 McClellan Street.
Galbraith, Milo Fullerton	Greenfield	86 Pleasant Street.
Gary, Myrtle Stebbins	Montague City	Montague City.
Gavagan, James Edward	Boston	Box 36, North Amherst, care of Mrs. Shampo.
Gendler, Minnie	Greenfield	North Amherst, care of Mrs. E. B. Hobart.
Genest, Edward Harry, Jr.	Pittsfield	South College.
George, Clayton Herman	Belchertown	Belchertown.
Gillette, Willard Raymore	Billerica	North College.
Gledhill, Patricia Anne	Dalton	North Amherst, care of Mrs. A. F. Taylor.
Goddard, Francis Dean	Woburn	116 Pleasant Street.
Goldberg, Helen Ethel	Revere	Draper Hall.
Golub, Barnett Louis	East Longmeadow	4 Hallock Street.
Goulat, Grace Mae	Fairhaven	Box 161, North Amherst.
Govoni, Irene Edna	North Agawam	North Amherst, care of Mrs. H. R. Hobart.
Granger, Ralph Hawthorne	Westfield	M. S. C. Farmhouse.
Griffin, Julian Philip	Indian Orchard	10 Hallock Street.
Guernard, Edward Frederick.	Dracut	North College.
Guion, Ellen LeRoy	Newton	North Amherst, care of Mrs. H. R. Hobart.
Gunn, Evelyn Alice	Southampton	North Amherst, care of Mrs. A. F. Taylor.
Gurka, Joseph John	Ware	8 Kellogg Avenue.
Guzowski, Victor Stanley	Northampton	64 Nonotuck St., Northampton.
Hall, Eben Theodore	West Upton	North College.
Hannifin, John Joseph	Northampton	195 Riverside Drive, Northampton.
Harlow, Henry James	Shrewsbury	9 Phillips Street.
Harrington, Elizabeth Katherine	Ludlow	Adams House.
Harris, Marion Threasa	Leominster	Adams House.
Harris, Robert Russell	Leominster	North College.
Hartwell, George Albert	Malden	North College.
Hast, Ethel Gertrude	Worcester	Adams House.
Hatch, Benjamin Wiggin, Jr.	Plymouth	Mt. Pleasant, care of Mrs. C. R. Green.
Hermanson, Robert Harlow	Boston	North College.
Hinckley, Howard Lester, Jr.	Dorchester	South College.
Hogaboom, Ovide Gervais	New Britain, Conn.	7 Nutting Avenue.
Horton, Darius Weekes	Wellfleet	South College.
Horton, Edward Clark	Newtonville	Mt. Pleasant, care of Dr. Bangs.
Hovey, Wendell Roy	Wakefield	North College.
Hubbard, Richard William	Sunderland	R. F. D. 10, Sunderland.
Hunter, Robert Packard	Melrose	Phi Sigma Kappa.
Hutt, Robert Frederick	Glastonbury, Conn.	North College.
Jackimczyk, Zigmund John	Florence	13 Oak St., Florence.
Jaworski, Ernest Anthony	Adams	North College.
Jerauld, Ralph Earl	Newtonville	South College.
Jillson, Stuart Farnham	Readsboro, Vt.	7 Phillips Street.
Johnson, Walter Oscar	Haverhill	3 Cosby Avenue.
Jones, Margaret	Westfield	Draper Hall.
Jordan, William Joseph, Jr.	Revere	North College.
Judson, Victor James	Lawrence	North College.
Keil, Joseph Francis	Attleboro	North College.
Kelleher, Bernard John	Turners Falls	10 Nutting Avenue.
Kellogg, Eloise Beers	Arlington	8 Allen Street.
Kieda, Walter Edward	Westfield	Q. T. V.
Kiely, James Maurice	Northampton	29 Henshaw Ave., Northampton.
Kimball, Leslie Collis	Pelham	1 Harkness Rd., Pelham.
King, Florence Mae	Millville	6 Allen Street.
Knowles, Albert Hadden	West Newbury	14 McClellan Street.
Koch, Robert Magoon	Greenfield	North College.
Koskela, Violet Sylvia	Maynard	46 McClellan Street.
Krttil, Charles Lewis	Westfield	29 North Prospect Street.
Lamson, Robert Douglas	Foxboro	South College.
Landis, Albert Broudy	Amherst	2 Allen Street.
Lannon, Marjorie Louise	Holyoke	24 North Prospect Street.

Leach, Wilfred Robert	West Bridgewater	North College.
Leary, June Margaret	Holyoke	8 Allen Street.
Leary, Theodore Moreau	Turners Falls	North College.
Leavitt, Roger Kenison	Framingham	North College.
Lebeshevsky, Louis Herbert	Thompsonville, Conn.	9 Phillips Street.
Libbey, Robert Franklin	Westboro	North College.
Lillie, Lucien Bingham	Springfield	120 Pleasant Street
Lindquist, Ruth Lydia	East Longmeadow	22 Fearing Street.
Little, Silas, Jr.	Newburyport	North College.
Loring, Elizabeth	Melrose Highlands	Draper Hall.
Lubin, Bertram	Boston	South College.
MacLaughlin, Marian Bright	Fiskeville, R. I.	Adams House.
MacQueston, Everett Spencer	Winchendon	Box 36, North Amherst, care of Mrs. Shampo.
Madden, William Philip	Ware	83 Pleasant Street.
Malloch, Ronald Carnegie	Greenfield	3 Hallock Street.
Mason, Ruby Nye	East Longmeadow	Adams House.
Masters, Edward Danville	Athol	North College.
McKelligott, John Henry	Palmer	North College.
McKeon, Dorothy Eva	Holyoke	4 Allen Street.
Merry, Alma Standish	Duxbury	Adams House.
Michelson, Howard Bryne	Dorchester	East Experiment Station
Miller, Joseph	Dorchester	North College.
Miller, Milton James	Northampton	24 Lasell Avenue, North- ampton.
Moran, James Frederick	Millis	North College.
Moulton, John Jesse	East Weymouth	North College.
Mozden, Walter Stanley	Three Rivers	7 Phillips Street.
Muller, William Richard	Darien, Conn.	7 Nutting Avenue.
Murray, Robert Vincent	Holyoke	North College.
Mushovic, Anton Michael	Greenfield	335 Deerfield St., Green- field.
Nash, Kenneth Bonney	Abington	North College.
Nassif, Edward Bedre	North Adams	9 Phillips Street.
Nay, Marshall Wren	Abington	North College.
Newcomb, Stanley Stowell	Orange	North College.
Newman, William Joseph MacKenzie	Florida	97 Pleasant Street.
Newton, Alfred Eastman	Sharon	81 Pleasant Street.
Nietupski, Peter Andrew	Three Rivers	8 Kellogg Avenue.
Norris, Ralph Eaton	Sharon	President's House.
Novick, Julius	Amherst	56 Pleasant Street.
Oberg, Augusta Elizabeth	Amherst	Adams House.
O'Brien, Allan John	Northampton	60 Pleasant Street.
O'Brien, Carl Clifford	Winchester	North College.
Oliver, Elizabeth Cheney	Huntington	22 Fearing Street.
Parsons, Katherine Davenport	Nevada City, Calif.	22 Fearing Street.
Pease, George Raymond	Amherst	13 East Pleasant Street.
Pease, Howard Edson	Ashfield	North College.
Pelissier, Ruth Elizabeth	Hadley	48 East Street, Hadley.
Pelton, William Fancher, Jr.	New Bedford	45 Fearing Street.
Perry, Elizabeth Cushman	Watertown	Adams House.
Pillsbury, Mary Amanda	Ashby	22 Dana Street.
Plastridge, Daniel Clayton	Concord	13 Woodside Avenue.
Plotczyk, John Aloysius	South Vernon	Box 36, North Amherst.
Pollin, Leo	Springfield	4 Hallock Street.
Prentiss, Edward LeRoy	Upton	North College.
Proulx, Helen Doris	Williamansett	62 John St., Williamansett.
Putnam, Richard Eliot	Greenfield	North Amherst, care of Mr. Snyder.
Putnam, Shirley Dorothy	Springfield	22 Fearing Street.
Raleigh, Walter Dalton	West Springfield	44 Triangle Street.
Ramsdell, Albert Bradbury, Jr.	Palmer	27 Fearing Street.
Reardon, Margaret Eleanor	Hadley	7 West St., Hadley.
Reed, Ruth Vassall	Waltham	22 Dana Street.
Reich, Eunice Ruth	Springfield	Adams House.
Riseman, Henry Frank	Revere	South College.
Robbins, Harold Edward, Jr.	Norwich, Conn.	7 Nutting Avenue.
Robbins, Virginia Judd	Norwich, Conn.	Draper Hall.
Robinson, Phillip	Revere	South College.
Rod, Sylvia Lillian	Becket Center	North Amherst, care of Mrs. E. B. Hobart.
Rogers, David James	Lynn	7 McClellan Street.
Rothberg, Haskell	Roxbury	86 Pleasant Street.
Ruffo, Arthur Joseph	Feeding Hills	16 Nutting Avenue.
Salamoff, Sidney Arthur	Roxbury	9 Phillips Street.
Sandford, Addison Lawton	Ware	83 Pleasant Street.
Sargent, Janet Christie	Auburndale	The Homestead.
Sargent, Ruth Wentworth	Wollaston	Adams House.
Savaria, Thomas Joseph	Ware	83 Pleasant Street.
Schlaefter, William Valentine	Englewood, N. J.	66 Lincoln Avenue.
Schreiter, Ralph William Francis	Walpole	South College.
Schubert, Bernice Giduz	Roxbury	North Amherst, care of Mrs. E. B. Hobart.
Scott, William Arthur	Bloomfield, Conn.	North College.
Seacord, Roger Voland	New Rochelle, N. Y.	South College.
Senecal, Willard Henry	Florence	16 Howes Ave., Florence.
Shapiro, Maurice	North Adams	56 Pleasant Street.
Sharfi, Hyman	Chelsea	56 Pleasant Street.
Shattuck, Willard Winthrop	Belchertown	72 Lincoln Avenue.
Shaw, Glenn Frederick	Palmer	31 North Prospect Street.
Shongood, Sanford	New York City, N. Y.	7 East Pleasant Street.

Siddall, George Thomas	Richmond	North College.
Siira, Raymond John	Centerville	South College.
Simmons, George Walker, Jr.	Amherst	8 Nutting Avenue.
Sleep, Charlotte Fogwell	Fitchburg	22 Dana Street.
Sleeper, Harold Anthony	South Groveland	South College.
Smith, Marion Estelle	Greenfield	Adams House.
Smith, Richard George	West Upton	North College.
Snow, Samuel Peaslee	West Roxbury	South College.
Sprague, Marjorie Louise	Walpole	Adams House.
Stanford, Dorothy Eva	Dedham	8 Allen Street.
Steadman, Kenneth Austin	Needham	10 Hallock Street.
Stevens, Nelson Pierce	Haverhill	North College.
Stewart, Donald Mitchell	Arlington	North College.
Stone, Philip Carlton	Athol	North College.
Streeter, Helen Guild	Springfield	Adams House.
Strickland, John Kay	Flushing, N. Y.	84 Pleasant Street.
Sumner, James Ellsworth	Squantum	46 Pleasant Street.
Taft, Eunice May	Dalton	Draper Hall.
Tani, Sulo John ¹	Worcester	North College.
Tannenbaum, Harold Samuel	Roxbury	South College.
Thatcher, Eleanor Charlotte	Athol	North Amherst, care of Mrs. H. R. Hobart.
Thayer, Carrol Edwin	Williamsburg	31 North Prospect Street.
Thompson, Ray Kinsman	East Northfield	North College.
Tikofski, Adolph Edward	Walpole	Baker Lane, care of Mrs Webb.
Tinti, Corada Sarah	North Agawam	North Amherst, care of Mrs. A. F. Taylor.
Tirrell, Wilbur Greene	South Weymouth	North College.
Toder, Emanuel Irving	Malden	South College.
Tosches, Joseph John	Milford	South College.
Tramposch, Emil John	Huntington Station, L. I., N. Y.	North College.
Trask, Owen Smith	Lexington	North College.
Valentine, James Jackson	Framingham Center	15 Fearing Street.
Veerling, John Peter	East Weymouth	North College.
Wallace, Donald Andrews	Arlington	South College.
Wallace, Willard Mace	Arlington	86 Pleasant Street.
Warner, Roger Lewis	Williamsburg	North College.
Warren, Thomas Larkin	Lawrence	North College.
Weiner, Myer Louis	Malden	South College.
Whitcomb, John Chandler	Boxboro	North College.
Whitton, Gladys Dorothy	North Adams	46 McClellan Street.
Wibry, Benjamin Joseph	Haverhill	30 North Prospect Street.
Willard, Luther Lincoln	Worcester	North College.
Williams, Lester Alfred	Melrose	Phi Sigma Kappa.
Winokur, Louis Isaac	Dorchester	86 Pleasant Street.
Wood, John Langille	Greenfield	86 Pleasant Street.
Wood, Paul Owen	New York, N. Y.	North College.
Wood, Robert Holman	West Upton	North College.
Wordell, Hillman Hathaway	Somerset	Alpha Gamma Rho.
Zewski, Walter Bernard	Northampton	357 Bridge Street, North- ampton.
Zucker, Dante	Holyoke	83 Pleasant Street.

SPECIAL STUDENTS.

Addison, Wallace Frederick	Turners Falls	79 Seventh Street, Turners Falls.
Dryden, Oswald Benton	Hoisington, Kans.	53 Lincoln Avenue.

STUDENTS REGISTERED AFTER CATALOGUE FOR 1930-1931 WAS PUBLISHED.
1932.

Kelley, Rodney Frederick	Long Lake, Minn.
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1933.

Poltenson, Hyman Isadore	Springfield.
Saffer, Ralph Michel	Springfield.

¹ Candidate for the Degree of Bachelor of Vocational Agriculture

SUMMARY BY CLASSES.

Class.	Men.	Women.	Total.
1932	98	29	127
1933	100	32	132
1934	144	51	195
1935	217	85	302
Specials	2	—	2
Total	561	197	758

GEOGRAPHICAL SUMMARY.

Massachusetts	709	Indiana	1
Maine	1	Kansas	1
New Hampshire	2	Texas	1
Vermont	4	Wisconsin	1
Rhode Island	2	Albania	1
Connecticut	19	Holland	1
New York	7	Norway	1
New Jersey	7		
California	1	Total	758

STOCKBRIDGE SCHOOL OF AGRICULTURE

GRADUATES, 1931

Alfred Herman Ahrens	Bronx, N. Y. C.
Stuart Harlow Allen	Shrewsbury.
Floyd Upton Bancroft	Tyngsboro.
George Albert Barber	Somerville.
Lawrence Eaton Blatchford	Attleboro.
Edgar Shears Boardman	Sheffield.
Stuart Gilmore Brown	North Attleboro.
John Brox	Dracut.
Stephen Francis Bruscoe	Hatfield.
Norman Ballou Burbank	Somerville.
Thomas Francis Burke	Woburn.
Ralph Loomis Bush	Holyoke.
Edward William Butler	Holyoke.
John Paul Carroll	Salem.
Lyman Matthew Chase	Littleton.
Frank Arthur Coolidge, Jr.	Barre.
Richard Prentiss Coville	Cummaquid.
Richard Cushing Crocker	Duxbury.
Robert Sears Crocker	Duxbury.
George Hubbard Doane	North Brookfield.
Edward Joseph Dostal	Northampton.
John Winthrop Duffill	Melrose.
Robert William Dykman	Westport, Conn.
Wesley Snow Faulk	Brockton.
Francis Xavier Fenton	West Roxbury.
John Field	Brookline.
George Leonard Foskit	Three Rivers.
Robert Norwood Glidden	Middleboro.
Michael Joseph Griffin, Jr.	Amherst.
Myron Chester Hartford	Tyngsboro.
Frank Wilson Hatheway	Amherst.
Frederick L. Higgins	Orleans.
George Raymond Hoyt	Merrimac.
Edward George Jones	Ashland.
Joseph Francis Keady	Rockland.
Alfred Kyle	Northampton.
Richard Grinnell Lewis	Framingham.
John Miller Little	Marshfield Hills.
Harold Clifford Lund	Shrewsbury.
Leonard Mongillo	Southington, Conn.
Arthur Phillips Moore	West Peabody.
Edward Parker Moulton	Peabody.
Henry Stephen Murray	Concord.
Robert Melton McKechnie	Natick.
Arthur Gilbert McWilliams	Hackensack, N. J.
Alfred Warran Nelson	Randolph.
Lawrence Ingvall Nelson	Petersham.
Arthur Hudson Perry	Barre, Vt.
Ernest Arthur Petersen	Framingham.
William Bertil Peterson	Lexington.
Thomas Linwood Pilling	Worcester.
Donald Powers Proctor	Spencer.
John Reynolds	Falmouth.
Harold Francis Rice, Jr.	Norwood.
Charles Albert Robertson	Somerville.
Elizabeth Rodman	North Kingston, R. I.
Eliot Francis Rogers	West Newton.
Margarita Seaver	Brookline.
A. Weston Smith, Jr.	Bronxville, N. Y.
Isabel Tyler Sornborger	West Springfield.
Barbara Alice Stalker	Framingham.
Lawrence Elroy Sundberg	Brockton.

William Patrick Twohig
 John Henry Vik
 Albert Francis Warren
 Lewis Cavine Watt
 Howard Sheldon Webster
 Lloyd Ellsworth Wheaton
 Oakley Fayne Whitney
 Richard Emerson Woodbury

Springfield.
 Wakefield.
 Medford.
 Somerville.
 Haverhill.
 Dartmouth.
 Orange.
 Fitchburg.

GRADUATES AS OF THE CLASS OF 1930.

Sanborn Ames Caldwell
 Richard Poor Chadwick
 Earle Benjamin Mosher
 Allison Wesselhoef Palmer
 Victor Veiklo Salo

Lynnfield.
 West Boxford.
 Worcester.
 Braintree.
 Millbury.

CLASS OF 1932.

Abbott, Thomas Lewis
 Babb, Lois Lumbert
 Baker, Robert Lee

Bellows Falls, Vt
 Mill River
 Middleboro

75 Pleasant Street, A.T.G.
 Draper Hall.
 Baker Lane, Care of Mrs.
 Dillingham.

Batchelor, Douglas Stanley

Athol

126 Hillside Avenue, Care
 of Miss Magee.

Bernier, Laurent Victor
 Bishop, Harold Whitney
 Booker, George Ival
 Bowen, Frank Arnold
 Bowen, James Myron
 Bruce, Jr., Leo Ivan
 Burnham, Leonard Augustus
 Carpenter, Duane Frederick, Jr.
 Charles Urban Jay
 Childs, John Harris
 Clark, Horace Herbert
 Cromie, Gilbert James
 Davis, Katherine Orne
 Davis, Norman Philip

Northampton
 Springfield, Vt.
 Corinna, Maine
 East Douglas
 Erving.
 Holliston
 Gloucester
 Bedford
 Framingham
 Deerfield
 West Springfield
 Andover
 Swampscott
 Stoneham

Northampton.
 4 McClure Street.
 9 Phillips Street.
 75 Pleasant Street, A. T.G.
 28 Pleasant Street.
 75 Pleasant Street, A. T. G.
 75 Pleasant Street, A. T. G.
 75 Pleasant Street, A. T. C.
 5 Allen Street.
 Deerfield.
 Poultry Plant.
 18 Cottage Street.
 Draper Hall.
 Baker Lane, Care of Mrs.
 Dillingham.

Dawson, Charles William
 dePrado, Theodore Harding

Lynn
 Crestwood, N. Y.

5 Allen Street.
 101 Pleasant Street, Co-
 lonial Inn.

Descheneaux, Omer Roy, Jr.
 Dick, Ralph
 Dolan, Francis Albert

Lowell
 Springfield
 Billerica

75 Pleasant Street, A. T. G.
 52 Lincoln Avenue.
 6 Tillson Court, Care of
 Mrs. Martin.

Dyer, Frank Edwin
 Ek, John Harold

Stoughton
 Brockton

9 Gray Street.
 73 Pleasant Street, Kolony
 Klub.

Faszczewski, Joseph Julius

Brockton

73 Pleasant Street, Kolony
 Klub.

Galbraith, Floyd Macolm
 Hanhy, Walter Edward
 Henry, David Stephens
 Hill, Norman Morse
 Howes, Miner Stebbins
 Hulbert, Howard Marshall
 Jackson, Samuel Quentin
 Jaeschke, Emil
 Jewett, Lawrence Lee
 Keith, Kenneth Edwin
 Kendall, Harold Archer, Jr.

Greenfield
 Brockton
 Wallingford, Conn.
 Framingham
 Cummington
 Holliston
 East Milton
 Adams
 Northampton
 Bridgewater
 Rockland

9 Gray Street.
 75 Pleasant Street, A. T. G.
 108 Pleasant Street.
 Phi Sigma Kappa.
 13 Phillips Street.
 86 Pleasant Street.
 9 Gray Street.
 10 McClellan Street.
 Northampton.
 75 Pleasant Street, A. T. G.
 126 Hillside Avenue, Care
 of Miss Magee.

Keohan, Francis Lawrence
 Kibby, William Vernon
 Kinnear, Kenneth Alden
 Kneeland, Paul Grosvenor

Weymouth
 Pittsfield
 Gardner
 Sterling

15 Cottage Street.
 26 Pleasant Street.
 4 McClure Street.
 73 Pleasant Street, Kolony
 Klub.

Kovar, Stephen David
 Lafrance, Melvin James
 Leland, Charles Lyman
 Liljegen, Solveig Utne
 Low, Curtis Maynard

Brookline
 Northampton
 East Bridgewater
 Quincy
 Dedham

75 Pleasant Street, A. T. G.
 Northampton.
 4 Hallock Street.
 Draper Hall.
 73 Pleasant Street, Kolony
 Klub.

Lowrie, George Henry, Jr.

New Bedford

Eames Avenue, Care of
 Mrs. Warnock.

Macquinn, William Edward
 Marsh, Arthur Edwin
 Mason, Robert Burnham

South Weymouth
 Berlin
 Princeton

108 Pleasant Street.
 72 Lincoln Avenue.
 73 Pleasant Street, Kolony
 Klub.

Mayhew, Charles Henry
 Mills, Robert Johnson

Middleboro
 Belmont

14 Orchard Street.
 73 Pleasant Street, Kolony
 Klub.

Mistarka, Stanley James

Northampton

101 Pleasant Street, Co-
 lonial Inn.

Mitchell, Lewis Jesse
 Moos, George Edward
 MacAdams, Leslie Mairs
 McAvoy, Walter Edward
 MacLeod, Kenneth Angus
 McNulty, Maurice Francis

Somerville
 South Hadley Falls
 Chelsea
 Boston
 Ipswich
 Longmeadow

86 Pleasant Street.
 108 Pleasant Street.
 12 Cottage Street.
 75 Pleasant Street, A. T. G.
 4 Chestnut Street.
 101 Pleasant Street, Co-
 lonial Inn.

Neely, Henry Herbert	Madison, Conn.	9 Fearing Street.
Nelson, Arthur Yngve	Brockton	73 Pleasant Street, Kolony Klub.
Noren, Nelson Fred	Bridgeport, Conn.	73 Pleasant Street, Kolony Klub.
Nye, William Frank	Springfield	84 Pleasant Street.
O'Connor, Thomas Patrick	Holyoke	75 Pleasant Street, A. T. G.
O'Gara, John Patrick	South Hadley Falls	3 McClure Street.
O'Leary, Francis William	Arlington	73 Pleasant Street, Kolony Klub.
Pearson, Leon Everett	Lynnfield Centre	72 Lincoln Avenue.
Pearson, Stanley Duff	Briarcliff Manor, N. Y.	3 Nutting Avenue.
Perkins, William Nelson	East Bridgewater	6 Nutting Avenue.
Planitzer, Walter William	Lawrence	18 Cottage Street.
Pond, Eldon Dexter	Holliston	75 Pleasant Street, A. T. G.
Queen, John Waters, Jr.	Boston	Phi Sigma Kappa.
Rabbitt, Timothy Paul	Holyoke	3 McClure Street.
Robinson, Floyd Greenwood	Cambridge	50 Sunset Avenue.
Robinson, Frank Tufts, Jr.	Cambridge	84 Pleasant Street.
Rogers, Milton Josselyn	South Hanover	108 Pleasant Street.
Rollins, Virginia	Jamaica Plain	Draper Hall.
Rood, Chester McCord	New Haven, Conn.	10 Chestnut Street.
Ross, Elton James	Milton	4 Baker Lane, Care of Mrs. Dillingham.
Ryan, Maurice Stephen	Peabody	75 Pleasant Street, A. T. G.
Saalfrank, Joseph Carl, Jr.	Lawrence	75 Pleasant Street, A. T. G.
Sarris, Andrew Theodore	Lowell	Baker Lane, Care of Mrs. Webb.
Sheridan, John Francis	Clinton	75 Pleasant Street, A. T. G.
Short, Philip Cutler	Springfield	73 Pleasant Street, Kolony Klub.
Skelton, Edgar Warren	Newton Highlands	75 Pleasant Street, A. T. G.
Slater, Gordon Elliot	Lexington	73 Pleasant Street, Kolony Klub.
Smith, Hugh Chaplin	Lawrence	Care of Mrs. F. S. Cooley, North Amherst.
Soares, Manuel Paul	Fairhaven	12 Chestnut Street.
Stedman, Sherwood Carlton	Brockton	73 Pleasant Street, Kolony Klub.
Stratton, Ralph Edward	Boston	73 Pleasant Street, Kolony Klub.
Sullivan, James Anthony	Holyoke	Holyoke.
Thomson, Chester Willard	West Rutland, Vt.	101 Pleasant Street, Colonial Inn.
Thurber, Stuart Johnson	Brattleboro, Vt.	86 Pleasant Street.
Toko, Leo Verner	Fitchburg	75 Pleasant Street, A. T. G.
Trott, Robert Langdon	Andover	9 Gray Street.
Turner, Marjorie Hazel	Yarmouthport	Draper Hall.
Vuornos, Bruno Kalervo	Brighton	Care of Mrs. R. C. Adams, North Amherst.
Walsh, Stanley Matthew	Longmeadow	73 Pleasant Street, Kolony Klub.
Warren, Daniel William, Jr.	Brookline	75 Pleasant Street, A. T. G.
Washburn, Reginald Sherman	Middleboro	Care of Mrs. R. C. Adams, North Amherst.
Watts, George Frederick	Whitman	Care of Mr. R. C. Packard, North Amherst.
Watts, Gilbert Curtis	Whitman	Care of Mr. R. C. Packard, North Amherst.
Webb, Bradford Ernest	Andover	10 McClellan Street.
Weidlich, Henry Kurt	Springfield	42 McClellan Street.
Wheeler, Chester Clinton	Amherst	32 Belchertown Road, Amherst.
Whitcomb, Donald Albert	Somerville	4 Baker Lane, Care of Mrs. Dillingham.
White, Howard Bertram	Fitchburg	18 Cottage Street.
Whitmore, Charles Gilbert	Forestdale	4 Hallock Street.
Whitney, Leonard Rogers	Pittsfield	10 McClellan Street.
Wiley, Arthur Lyman, Jr.	Wakefield	84 Pleasant Street.
Williams, Dwight Keble	Poughkeepsie, N. Y.	Baker Lane, Care of Mrs. Webb.
Williams, Ormond Kameron	Bridgeport, Conn.	6 Tillson Court, Care of Mrs. Martin.
Wyatt, Ralph	Fairview, Penna.	73 Pleasant Street, Kolony Klub.

SPECIAL STUDENTS.

Burbank, Norman Ballou	Somerville	73 Pleasant Street, Kolony Klub.
Maroney, Donald Thomas	Uxbridge	108 Pleasant Street.

CLASS OF 1933.

Amerian, Kurken Gregory	Watertown	7 East Pleasant Street.
Anderson, Bernhard A.	Framingham	25 Gray Street.
Barney, Grover Cleveland, Jr.	Lunenburg	53 Lincoln Avenue.
Bedford, Edward Thomas	Forest Hills, N. Y.	The Perry Hotel.
Bedford, Harold Pemberton	Forest Hills, N. Y.	The Perry Hotel.
Benson, Ralph Thomas	East Bridgewater	Summer Street, Care of Mrs. Davenport, North Amherst.

Bernier, Arthur Lewis	East Bridgewater	Summer Street, Care of Mrs. Davenport, North Amherst.
Bodwell, Gareth Palmer	Sharon	28 Pleasant Street.
Bonnemort, Charles Roscoe	Dedham	Amherst Tavern.
Booth, Charles Dolphus	Walpole, N. H.	Amherst Tavern.
Bossidy, Robert Haig	Lee	15 Cottage Street.
Boudo, Henry James	Northampton	Northampton.
Brace, Albert George	Amherst	131 West Street.
Brandley, James William	Jamaica Plain	Baker Lane, Care of Mrs Webb.
Briggs, Robert O.	Athol	Athol.
Brown, George Addison	Northampton	Northampton.
Burbank, Glen Morvin	Warren	21 Pleasant Street.
Burrell, Robert Howard	Weymouth	15 Cottage Street.
Burridge, George Cornelius	Longmeadow	15 Cottage Street.
Calvert, Floyd Carlton	Athol	17 Cottage Street.
Cameron, Charles Robert	Boston	35 North Prospect Street.
Carlson, Walter Walfrid	Harvard	69 Main Street.
Carroll, Ethel Barnes	Springfield	8 South Prospect Street.
Castro, Anthony	Taunton	55 Amity Street.
Caton, Rodney Wesley	Ashby	10 Chestnut Street.
Cook, Gordon Makepeace	Amherst	R. F. D. No. 1.
Cooney, Joseph Francis	Rockport	Eames Avenue, Care of Mrs. Warnock.
Cottrell, Lewis Arthur	Middlefield	61 Amity Street.
Crawshaw, Richard Eugene	Medford	30 Cottage Street.
Cromwell, Harold Frederick	Orange	Orange.
Cross, Robert Francis	Osterville	3 Nutting Avenue.
Crouse, John Southworth	Lawrence	126 Hillside Avenue, Care of Miss Magee.
Currier, Charles Amos	Meriden, Conn.	Eames Avenue, Care of Mrs. Warnock.
Cutter, James Ross	Salisbury	14 McClellan Street.
Davis, Gwendolyn	Taunton	57 Pleasant Street.
Dennen, Frederick Waite	Gloucester	3 Hallock Street.
Desoe, Barbara Ella Paton	West Springfield	70 Lincoln Avenue.
Dibble, Charles Emerson	Northampton	Northampton.
Dodge, Henry D.	South Royalton, Vt.	17 Cottage Street.
Dolby, Warren Chase	Great Barrington	52 Lincoln Avenue.
Doskotch, Stanley	Amherst	R. F. D., Box 176.
Dowd, Edward Joachim	Amherst	61 College Street.
Eastman, Albert Lowell	Falmouth	42 Cottage Street.
Feeney, Joseph Michael	Brockton	Summer Street, Care of Mrs. Davenport, North Amherst.
Fenno, Gordon Hill	Westboro	42 McClellan Street.
Field, George Almer	Sheffield	9 Fearing Street.
Field, Laurence George	Williamstown	126 Hillside Avenue, Care of Miss Magee.
Folan, John Francis	Pittsfield	14 McClellan Street.
Foulsham, Charles Kenneth	Bethlehem, Penna.	116 Pleasant Street.
Frank, Carl Alfred	Falmouth	42 Cottage Street.
Gallagher, John Vincent, Jr.	Middleboro	25 Gray Street.
Gates, William Edson	Ashland	Baker Lane, Care of Mrs. Webb.
Gelineau, Raymond Flavien	Lawrence	14 McClellan Street.
Goodnow, Hollis B.	Waban	3 Hallock Street.
Gosciminski, Stephen	Indian Orchard	7 McClellan Street.
Grady, Francis Joseph	Boston	7 McClellan Street.
Gray, Richard Howes	Dennis	30 North Prospect Street.
Hagelberg, Edward Eino	Fitchburg	Baker Lane, Care of Mrs. Webb.
Haggerty, James Harold	Rockland	126 Hillside Avenue, Care of Miss Magee.
Hahn, Frank Jacob	Holyoke	30 North Prospect Street.
Hallaren, Arthur Edward	Lowell	Baker Lane, Care of Mrs. Webb.
Hamel, John Bernard	Worcester	30 North Prospect Street.
Haney, Joseph Paul	Medford	31 North Prospect Street.
Harris, Elbert	Yonkers, N. Y.	126 Hillside Avenue, Care of Miss Magee.
Hastings, Chilton Mason	Lynnfield Centre	72 Lincoln Avenue.
Hawes, Lauren Winslow	Natick	81 Pleasant Street.
Hebert, Lisle Joseph	Northampton	Northampton.
Hendrickx, Charles Howard	Worcester	Care of Mrs. Harlan K. Hobart, North Amherst.
Hill, Alfred Norman	Ludlow	Ludlow.
Hill, Bernard Thomas	Framingham	Care of Mrs. Southwick, North Pleasant Street.
Hilton, Harry Edward	Walpole	9 Gray Street.
Hokanson, Harold Raymond	Brockton	5 East Pleasant Street.
Hopkins, Alice Lillian	Orleans	70 Lincoln Avenue.
Hunt, Harold Edward	Dalton	28 Pleasant Street.
Jaeger, Alfred Berthold	Newark, N. J.	27 Fearing Street.
Jarkko, Leo O.	Fitchburg	Baker Lane, Care of Mrs. Webb.
Jennings, Howard Hall	Easton	Care of Mrs. G. L. Cooley North Amherst.
Keegan, Stanley Kenneth	Shrewsbury	69 Main Street.
Kerlin, Isaac	Spencer	14 South College.
Kilcoyne, James Harold	Clinton	7 McClellan Street.

Klock, Clarence Randolph	Newburyport	4 McClure Street.
Koistinen, Paul Olavi	North Stonington, Conn.	10 McClellan Street.
Lahtinen, Ahti	Westminster	29 North Prospect Street.
Leonard, Edgar Darling	Sutton	18 Nutting Avenue.
Letellier, Walter	Agawam	30 North Prospect Street.
Livermore, Leland Bromley	Ludlow	Baker Lane Care of Mrs. Webb.
Loftus, James Alphonsus	Roxbury	116 Pleasant Street.
Macdonald, John Duncan	Bridgeport, Conn.	17 Cottage Street.
Mansfield, Richard Dexter	Wakefield	30 North Prospect Street.
Marston, Lawrence Wilson	Brockton	14 McClellan Street.
Martin, John Rose	Wauquoit	10 Chestnut Street.
Merrill, Alexandria	South Hadley Centre	South Hadley Centre.
Merrill, Henry Wales	Randolph	Amherst Tavern.
Mueller, George Theodore	Holyoke	30 North Prospect Street.
Murphy, Leo Vincent	Marshfield	9 Gray Street.
McIver, William Henry	Brockton	Eames Avenue, Care of Mrs. Johnson.
MacLean, William James	West Bridgewater	Eames Avenue, Care of Mrs. Warnock.
MacQuade, Joseph Walter	Osterville	126 Hillside Avenue, Care of Miss Magee.
Newton, Donald James	Montague	Montague.
Noone, Kenneth McCormac	Belmont	9 Gray Street.
Nyland, Harry Edward	Rockport	Eames Avenue, Care of Mrs. Warnock.
Oehme, Chester Gordon	Princeton	13 Hallock Street.
O'Neil, James Francis	Framingham	Care of Mrs. Southwick, North Amherst.
O'Neill, Nicholas	Sherborn	Eames Avenue, Care of Mrs. Warnock.
Pearson, Harold James	Lowell	97 Pleasant Street.
Proctor, Thorton Alfred	West Medway	Baker Lane, Care of Mrs. Webb.
Rantoul, Albert Wood, Jr.	Cambridge	18 Nutting Avenue.
Reed, Virginia	Waltham	8 South Prospect Street.
Reirden, Paul Shea	Springfield	69 Main Street.
Rider, Carol Adelaide	Burlingham, N. Y.	12 East Pleasant Street.
Riley, Herbert Emery	Tyngsborough	9 Gray Street.
Robbins, Ronald Goddard	Framingham	4 Hallock Street.
Root, Edgar Whitney	Westfield	5 Nutting Avenue.
Schmid, Fred Daniel	Roslindale	28 Pleasant Street.
Schoonmaker, Robert Selleck, Jr.	Amherst	12 Lincoln Avenue.
Scott, David	Passaic, N. J.	15 Fearing Street.
Sears, Charles Augustus Emery, Jr.	Dighton	17 Kellogg Avenue.
Senior, George Calvin	Salisbury, Conn.	6 Tillson Court, Care of Mrs. Martin.
Sheehan, John Andrew	Lowell	6 Tillson Court, Care of Mrs. Martin.
Sherwood, Warren Walker	Athol	Baker Lane, Care of Mrs. Webb.
Shulander, Raymond Alfred	Chicago, Ill.	17 East Pleasant Street.
Sibel, John Edward	Mt. Airy, Philadelphia, Penna.	Eames Avenue, Care of Mrs. Warnock.
Simmons, Eric Whiting	Hingham Center	Eames Avenue, Care of Mrs. Warnock.
Simpson, George	Andover	18 Cottage Street.
Small, Frank Andersen	New Bedford	45 Fearing Street.
Smith, John	South Dartmouth	30 North Prospect Street.
Smith, Robert Samuel	Westboro	7 East Pleasant Street.
Spalding, George Howard	Guilford, Conn.	13 Hallock Street.
Spear, Philip Augustine	Rockport, Maine	57 Pleasant Street.
Stearns, Perry Chamberlain	Springfield	52 Lincoln Avenue.
Steele, Arnold David	North Adams	4 McClure Street.
Steele, Charles Henry	East Longmeadow	Eames Avenue, Care of Mrs. Warnock.
Steria, Wilbur, Richard	Lowville, N. Y.	17 East Pleasant Street.
Stone, Herbert Edwin	Arlington	Baker Lane, Care of Mrs. Webb.
Sullivan, John Joseph	Cambridge	Amherst Tavern.
Sullivan, Paul Thomas	Brimfield	Northampton.
Swanson, Milton Reed	Malden	30 North Prospect Street.
Thayer, Gordon Elmer	West Dennis	30 North Prospect Street.
Thompson, Lloyd Fabian	Brockton	5 East Pleasant Street.
Tileston, Robert Cushing	Dorchester	3 Hallock Street.
Towne, Leland Salem	Williamstown	69 Main Street.
Townsend, Allan Livingston	Arsdsley, N. Y.	15 Fearing Street.
Turner, John Methuen	Springfield	Eames Avenue, Care of Mrs. Warnock.
Van Leeuwen, John Kenneth	Worcester	12 Hallock Street.
Veiga, Manuel Mello	Lowell	4 Cosby Avenue.
Viitanen, Unto Bernard	Fitchburg	14 McClellan Street.
Wakefield, Lester Harrington	Lunenburg	14 Kellogg Avenue.
Wakelee, Robert Charles	Waterbury, Conn.	Eames Avenue, Care of Mrs. Warnock.
Waring, Richard	Swampscott	55 Amity Street.
Whiting, Norman James	Winchester	30 Cottage Street.
Williams, Henry Phillips, Jr.	Detroit, Mich.	3 Nutting Avenue.
Wilson, Robert G.	Waltham	30 North Prospect Street.
Wise, Harold Herman	Brookline	Eames Avenue, Care of Mrs. Warnock.
Wise, Robert Lawrence	Medford	34 McClellan Street.

Woodard, George Newton	Worcester	13 Hallock Street.
Woodward, Robert Arthur	Frammingham	Care of Mrs. Stowell, Pleasant Street.
Wright, Donald Clarence	Wollaston	9 Gray Street.
Wyckoff, Edward Seddan	Bedminster, N. J.	12 Hallock Street.
Young, Joseph Henry	Worcester	13 Hallock Street.

SUMMER SCHOOL, 1931.

Graduate Students. (See list on page 109).

Undergraduate Students.

Adams, Edna B.	East Springfield.
Aleck, Angela Ann	Amsterdam, N. Y.
Ashman, Elmore G.	Walpole.
Astore, John J.	West Stockbridge.
Baker, Dorothy M.	Millers Falls.
Barnum, Vera R.	Lakeville, Conn.
Belden, Anna H.	Bradstreet.
Bezanson, Warren	West Hartford, Conn.
Bishop, Herbert L.	Worcester.
Bulman, James C.	Greenfield.
Bunten, John F.	Montello.
Campbell, Bernice	Easthampton.
Carbee, Ruth M.	Dorchester.
Carmody, May F.	Belchertown.
Carroll, Ethel H. Barnes	Springfield.
Carter, Esther B.	North Amherst.
Casey, Charlotte B.	Easthampton.
Chapman, Gean M.	Bradford.
Clark, Newell L.	Springfield.
Coldwell, Archibald G.	Saugus.
Connor, Hazel V.	Palmer.
Cook, Florence M.	Hadley.
Cornell, Beatrice D.	Amherst.
Decker, Catherine	South Deerfield.
Derby, Llewellyn L.	Amherst.
Dessureault, Bella M.	Montague.
Dods, Agnes	Montague.
Donnelly, Ann H.	Jamaica Plain.
Dowling, William F.	Holyoke.
Dryden, Oswald B.	Hoisington, Kansas.
Dugan, Rita	South Hadley Falls.
Efimchenko, Basil M.	Russia.
Eldredge, Josephine	Chatham.
Field, Mary	Florence.
Flaherty, Alice M.	Belchertown.
Fletcher, Robert B.	Worcester.
Flynn, Augusta J.	Millers Falls.
Ford, Gertrude	New York City.
Gagliarducci, Vincent N.	Springfield.
Giles, Elizabeth G.	Springfield.
Gilmore, Ruth M.	West Springfield.
Gleason, Irene	Northampton.
Glynn, Marion L.	Amherst.
Gordon, Virginia	Amherst.
Goulston, Sadie	Dorchester.
Greene, William C.	Middlebury, Conn.
Hagar, Lillyan	Dalton.
Hannum, Lucy	Easthampton.
Harrington, Elizabeth	Ludlow.
Harrington, Jennie D.	Ludlow.
Harvey, Edward W.	Amherst.
Haukelid, Knut	Oslo, Norway
Hicks, Murray B.	Greenfield.
Hillabrandt, Leila E.	St. Johnsville, N. Y.
Hodge, Kenneth E.	Monson.
Hodsdon, Jr., George E.	Gloucester.
Hollis, L. Eyllen	South Weymouth.
House, Zilpha A.	Springfield.
Howlett, Carey H.	Southampton.
Hugenberger, Wilma M.	Decatur, Ill.
Izzi, Emil	South Barre.
Jahmle, Carl G.	Winthrop.
Johnson, Harriet Louise	Greenfield.
Karlson, J. Andrew	Worcester.
Kaylor, John D.	Fall River.
Keenan, John H.	Dorchester.
Kerridge, Robert L.	New London, Conn.
Kingsbury, Aileen L.	Braintree.
Kingsbury, Harlan W.	Braintree.
Kingsston, Elizabeth	Whitinsville.
Kostenbader, Louise M.	Holyoke.
Lade, Jr., Archie	Northampton.
Leary, Mrs. Mary M.	Turners Falls.
Lee, Georgia W.	Hadley.
Levine, Harry O. H.	Springfield.
Lucey, John P.	Holyoke.
Mackin, Mary M.	Millers Falls.
Manwell, Francis H.	Williamsburg.
Manwell, Richard F.	Williamsburg.
Markus, Mary M.	Monson.

Martin, Margaret	Amherst.
Millane, Anastasia	Holyoke.
Mingo, Oscar E.	Everett.
Morris, Helen M.	Springfield.
Morse, Martha	Northampton.
McNamara, Gertrude	East Bridgewater.
Nelson, Jr., Harmon O.	Whitinsville.
O'Connor, Eleanor J.	Northampton.
O'Connor, Jeannette	Holyoke.
O'Connor, Margaret A.	Northampton.
Pearson, Harold J.	Lowell.
Pollin, Lillian	Springfield.
Quinlan, Mary E.	Easthampton.
Reed, Linnie E.	West Sterling.
Reed, Ruth V.	Waltham.
Reed, Virginia	Waltham.
Richardson, Alice	Franklin.
Ritter, Elizabeth	Chicopee.
Roach, Alice G.	Bridgewater.
Robinson, Janet H.	Reading.
Ross, Helena S.	Northampton.
Ross, Wendell D.	Northampton.
Rowell, Elisabeth I.	Groton.
Russell, Waldo E.	Townsend.
Ryan, John B., Jr.	Swampscott.
Salenius, Charles H.	Hingham.
Saltman, Rose	Holyoke.
Sartwell, Julia V.	Leeds.
Smith, A. Weston, Jr.	Bronxville, N. Y.
Squier, Phyrne	Wales.
Steenken, Emily	East Hampstead, L.I. N.Y.
Stiles, Vernon D.	Hadley.
Stomberg, Marion K.	Florence.
Sugden, Lelia	Spencer.
Sylvester, George I.	Glen Rocks, N. J.
Taft, Robert	Mendon.
Thomas, John E.	Springfield.
Thompson, Rufus H.	Amherst.
Townsend, Eleanor	Worcester.
Trow, Francis G.	Buckland.
Wanegar, Melvin	Montague City.
Warner, Lulu W.	Amherst.
Warren, Philip W.	West Auburn.
Watson, Edward W.	Plymouth.
Welch, Fred J.	Rockland.
Wendell, Charles B.	Belmont.
West, Isabelle R.	Palmer.
Wherity, Richard W.	Scituate.
Woodbury, Charles A.	Springfield.

WINTER SCHOOL, 1931.

Allwood, John	Westfield.
Bartlett, Frank	Bellevue Falls, Vt.
Bates, Richard K.	Carlisle.
Bedard, Paul	New Bedford.
Berlin, David	Dorchester.
Bernard, Fred	Sandwich, Illinois.
Blue, James R.	Capahosic, Va.
Bloom, Sidney D.	East Bridgewater.
Bowers, Margaret I.	Scarsdale, N. Y.
Bowlby, Kenneth	Wollaston.
Bowser, Austin L.	North Abington.
Brody, William	Albany, N. Y.
Broadhurst, Everett W.	Somerset.
Bullock, Ralph F.	Brattleboro, Vt.
Caldwell, Sanborn A.	Lynnfield Centre.
Carberry, James F.	Lake Buff, Illinois.
Carter, Charles C.	Cedar Rapids, Iowa.
Charest, Raymond	Fall River.
Cherrier, Carl W.	Plymouth.
Comtois, Edgar E.	Holyoke.
Cunningham, Clarence W.	Lowell.
Dahnke, William L.	Northampton.
Dean, Wendell A.	Waltham.
Deary, Thomas C.	Webster.
Devoe, Frederick E.	Cambridge.
DeNormandie, James	Lincoln.
Dickinson, Robert J.	Woodbridge, Conn.
Figel, Jr., George	Turtle River, Minnesota.
Fish, Bertram D.	Fitchburg.
Fowler, Howard	Hampden.
Gaskill, Clayton W.	Hopedale.
Geer, Joseph T.	West Acton.
Gilman, Frank M.	Chelsea, Vermont.
Goss, C. Lucius A.	Worcester.
Grant, 2d, William H.	Charlottesville, Vermont.
Hanagan, Walter A.	Bradford.
Hansen, Edwin	Concord.
Harlow, Mrs. Mildred S.	Newport, R. I.
Hayward, Clarence F.	Lowell.
Hopkins, George	Chepachet, R. I.

Ives, Kenneth	Amherst.
Johnson, Edwin V.	Woburn.
Johnson, Eric V.	Danielson, Conn.
Kellogg, Richard A.	Feeding Hills.
King, Harold A.	Feeding Hills.
King, Joseph W.	Northampton.
Kingsbury, Carl M.	Belchertown.
Looney, Walter J.	Marlboro.
Maine, Bernard B.	Willimantic, Conn.
Marsinsik, John P.	Clinton.
Martinage, Sylvanus H.	Methuen.
Mitchell, Jr., Chauncey L.	Winchester.
Mitchell, Robert L.	Salem.
Morrow, William H.	Holyoke.
McTigle, Thomas C.	Syracuse, N. Y.
O'Connell, Timothy	Saratoga Springs, N. Y.
Paquette, Ludger A.	Fall River.
Partridge, Warren A.	Lexington.
Phillips, Roger W.	Saylesville, R. I.
Piasta, Francis	Webster.
Poe, James	Sterling Junction.
Pohlman, Roy H.	Worcester.
Quinn, Harry F.	Franklin.
Raymond, Leo J.	Valley Falls, R. I.
Richards, Dorothy	Cambridge.
Richardson, Dorothy L.	East Corinth, Vt.
Robert, Laurent F.	Springfield.
Rogers, Harry	Fairhaven.
Scott, Eric A.	Boylston.
Seaman, Harold	Worcester.
Taylor, Arthur C.	North Amherst.
Terry, Donald M.	Belchertown.
Thompson, Oliver W.	Unionville, Conn.
Toole, Henry J.	Amherst.
Torok, Julius W.	Darien, Conn.
Travers, Henry J.	Lexington.
Turner, Ralph W.	Frammingham Center.
Veiga, Manuel M.	Lowell.
Walsh, Maurice F.	Springfield.
Wanberg, Paul G.	Adams.
White, John D.	White Plains, N. Y.
Whitehead, Joseph	Cromwell, Conn.
Whiting, Jr., John K.	Cambridge.
Wilcox, E. Roger	Manchester, Vt.
Willmann, Werner	Cambridge.
Wood, D. Thurber	Segregansett.

SUMMARY OF SHORT COURSE ENROLLMENT.

	Men.	Women.	Total.
Stockbridge School of Agriculture:			
Second year	108	5	113
First year	152	7	159
Winter School, 1931	82	4	86
Summer School, 1931 (exclusive of Graduate Students)	54	75	129
Specials	2		2
Totals	398	91	489

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Gifts and Bequests.

For the information of those who wish to make a gift or a bequest to this College, the following suggestion is made as to the form which may be used.

"I give (and bequeath) to the Trustees of the Massachusetts State College at Amherst, Massachusetts, the sum of.....dollars.

Signed....."

THE M. S. C. BULLETIN

AMHERST, MASSACHUSETTS

VOLUME XXIV

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MASSACHUSETTS STATE COLLEGE

THIS ISSUE OF THE BULLETIN CONTAINS THE
REPORT OF THE PRESIDENT AND OFFICERS
OF ADMINISTRATION FOR THE YEAR ENDING
NOVEMBER 30, 1931, WHICH IS A PART OF
THE SIXTY-NINTH ANNUAL REPORT OF THE
MASSACHUSETTS STATE COLLEGE AND AS
SUCH IS PART I OF PUBLIC DOCUMENT 31.
(SECTION 8, CHAPTER 75 OF THE GENERAL
LAWS OF MASSACHUSETTS)

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MASSACHUSETTS STATE COLLEGE

REPORT OF THE PRESIDENT TO THE BOARD OF TRUSTEES, 1931

It is with a keen sense of pleasure that I attempt to summarize the progress of the College during the year ending November 30, 1931. In many ways, this has been one of the most significant years in the history of the institution. Even a casual consideration of the many different phases of the work of the College which are presented in the several reports of its administrative officers impresses one with the general atmosphere of enthusiasm, confidence and hope which characterizes the whole organization at this time. The best reward for public service, such as ours, is the consciousness that the service has been rendered well and is meeting with appreciation from those who receive its benefits. I am sure that all who are promoting our enterprise of service to the educational needs of the Commonwealth of Massachusetts have real cause for satisfaction this year, and I wish to express my own appreciation and congratulation to the members of the Board of Trustees for their generous contribution of time, effort and thought to the affairs of the College.

REVIEW OF THE YEAR

Change of Name of the College

Probably the most significant event of the year was the change of the name of the College. This was the culmination of a long effort by students and alumni to secure for the College a name which might more accurately indicate its scope and functions. The Board of Trustees took action on November 10, 1930, to petition the Legislature for this change. This petition was presented to the Legislature as House Bill 336 sponsored by Representatives H. D. Brown and L. A. Webster, both alumni of the College. A hearing was held before the joint committee on State Administration on January 28. At this hearing, trustees, alumni, and students presented arguments in support of the bill. The bill was approved by the Legislature and signed by His Excellency, Governor Joseph B. Ely, on March 26, 1931. In accordance with legislative procedure it would have become effective ninety days later or on June 24. However, in order that degrees might be granted at Commencement on June 15 under the new name and upon petition of the trustees

Governor Ely invoked a special authority of the General Laws of the Commonwealth and declared the change of name in effect on April 15, 1931. Since that date this institution has been officially the Massachusetts State College.

Changes in Staff

Only seven members of the professional staff were lost to the College this year by resignation as compared with twenty-four last year. We were greatly grieved by the loss, through death, of Professor Charles H. Thompson, Professor Esther S. Davies, and Mr. Walter L. Cutler. Professor Thompson's death occurred on January 31, 1931. He had served the College as a very successful teacher of Horticulture since 1915 and was loved and admired by students and faculty alike.

Professor Davies died on July 31, 1931. Although her service at the College had been for a comparatively brief period (since 1927) she had done very effective research in nutrition as a member of the staff of the Experiment Station. Mr. Cutler died on October 31, 1931. He had given six years of efficient service as a technical assistant in the Experiment Station.

In addition to appointments made to fill vacancies occurring in the staff during the year, ten new positions were established and filled. Six of these were in the Extension Service and were made possible by additional appropriations of Federal Funds. One new member was added to the Experiment Station staff at the Waltham Field Station and three new members were added to the instruction staff.

Student Enrollment

Student enrollment for the fall term of 1931 increased twenty per cent over that at the same time last year and exceeded all previous attendance records. We have the largest freshman class in the history of the College, the largest number of women students, the largest enrollment in the undergraduate degree course, the largest graduate school enrollment and the largest enrollment in all resident courses combined. Because of lack of housing facilities admission to women students was closed on July 18 after which some seventy applicants were refused consideration.

The list of students for the year ending November 30, 1931, will show 108 persons enrolled as graduate students, 760 in the undergraduate degree courses, 273 in Stockbridge School, and 215 in summer and winter school courses, a total of 1,356.

A chart of previous enrollment statistics shows that the low point for attendance was reached in the war year of 1918 when there were 384 students in the degree courses and only 581 in all resident instruction. There was a rapid increase following the war which reached a peak in 1921. In that year there were 546 students in the degree courses, 293 in the Stockbridge School, and 1,242 in all resident courses. For two years following 1921 there was a falling off in attendance until in 1923 the college courses were reduced to 514, the Stockbridge School 169 and all resident courses combined to 944. Since 1923 the tendency has been for enrollment to increase although the rate has not been regular and this year's increase is much greater than that of any other year of the period. The average annual increase since 1923 has been, for the college course 6.5%, for the Stockbridge School 5.9%, and for all resident instruction combined 4.5%.

Honorary Degrees

Honorary degrees were conferred upon two distinguished alumni of the College at the last Commencement. The degree of Doctor of Science was awarded to Dr. Joseph Lawrence Hills of the Class of 1881, now Dean of the College of Agriculture and Director of the Experiment Station of the University of Vermont. Dr. Hills is well known throughout the country for his long connection with the Association of Land-Grant Colleges and Universities, which he has served as President and for many years as Secretary and Treasurer.

The degree of Doctor of Science was also conferred upon Dr. Charles Sumner Howe of the Class of 1878, who recently retired from the Presidency of the Case School of Applied Science after thirty years of service at that institution. Dr. Howe is the author of many important contributions to scientific literature, especially in the field of astronomy, and is well known as an educator, scientist and administrator.

I believe that the College does well to thus recognize the achievements of its distinguished alumni and I am sure that in the cases of those honorary degrees which it has thus far conferred it has not only emphasized well merited achievement but has at the same time distinctly honored itself.

Physical Education Building Dedicated

The dedication of the new Physical Education Building, on June 13, marked a significant milestone in the progress of this institution. This splendid structure makes available to our students practically all of the modern facilities for physical education and is probably the most appreciated addition to college equipment that has ever been provided.

The dedication exercises were a part of the Commencement program and were very interesting and appropriate. Mr. Philip F. Whitmore, Alumnus, Trustee and Chairman of the Building Campaign Committee, presided. Mr. Clinton F. Goodwin of the Class of 1916 spoke as representative of the architects. The President of the College was its representative on the program and Professor Hicks spoke for the Department of Physical Education. Charles H. Gould, President of the Associate Alumni, told of alumni interest in the building. Honorable Charles P. Howard, Chairman of the State Commission on Administration and Finance, spoke very appropriately and pleasantly as the representative of the Commonwealth. The committee in charge was fortunate in securing Dr. Howard J. Savage of the Carnegie Foundation to give the principal address. The building was first opened on this day for public inspection and was greatly admired by the hundreds of alumni and friends of the College who were present. The Associate Alumni published a well illustrated and attractive booklet commemorating this significant dedicatory event.

Student Health Service

We have now experienced a full year of our newly organized Student Health Service and I am glad to be able to report complete satisfaction with it. Dr. E. J. Radcliffe, who is in charge of this service, has not only exhibited a high professional ability, but in his relationships with students as teacher and medical adviser he has shown the understanding and sympathy which is so essential to such a service as this.

One of the important accomplishments of this service during the year was the efficient handling of the cases of infantile paralysis which developed among our students. At the time of the opening of College there was a general epidemic of this disease in Massachusetts. Consideration was given to the advisability of postponing the opening of College. It was felt, however, that since practically all of our students came from within the area of the epidemic we were justified in maintaining our schedule. It seemed probable, also, that our efficient health service could take fully as good care of our students as they would receive at home and subsequent events justified this confidence. Most of the cases of this disease which occurred among our students (there were five in all) developed soon after the opening of College, indicating that each student was probably infected before he left home. The operation of the health program, which included physical examination of freshman students and prompt reporting to the health officer of all cases of illness, however slight, enabled the doctor to detect all cases of the disease in their very early stages and to take remedial measures. The result was that no case developed paralysis and in all cases the students were able to return to their college work after a few weeks. Parents have been very grateful for this health service and some of them have said that they felt sure their sons were better cared for here than they would have been at home under similar circumstances due to the vigilance and understanding of our health officer. The general result has been the development of a very satisfactory feeling of confidence in and loyalty to the Student Health Service.

Unemployment Relief Project of College Employees

Following the suggestion of a central committee of state employees at Boston, the employees of this College have organized a program for unemployment relief

under the supervision of a committee of five of their members. I believe this program will be a very significant contribution to the relief work in the district during the present winter. The committee expects to have available a total sum of approximately three thousand dollars.

One of the methods by which it is planned to carry on this relief program is through the employment of men out of work. With the cooperation of college authorities certain improvement projects on the campus such as the building of walks and clearing of brush have been organized and these relief funds will be used to pay for the labor, now unemployed, to carry them out.

I feel very proud of the spirit with which our staff has met this problem and am sure much good will be accomplished.

The Land-Grant College Survey

Reference has been made in preceding reports to the survey of the land-grant institutions of the country which was being made by the Federal Office of Education. The survey was completed in the spring of 1930 and a final report prepared and distributed in December of that year. The report is printed in two volumes, with a total of 1,918 pages.

The report points out that while the "land-grant colleges" actually came into existence through the stimulus of a Federal law, and during their development have based their major educational policies upon the provisions of Federal statutes which make appropriations to assist in their support, they are essentially State institutions to be operated as an integral part of the public educational system of the State. Further the report shows that the original Federal Act was intended not to inaugurate a new a special type of education, but rather to furnish "liberal and practical" education to the "industrial classes" as contrasted with the "intellectual classes" for whom only collegiate education was considered to be available at that time. Senator Morrill, on the 25th anniversary of the establishment of these colleges, said: "The design was to open the door to a liberal education for this large class at a cheaper cost from being close at hand and to tempt them by offering not only a sound literary instruction, but something more applicable to the productive employments of life. It would be a mistake to suppose it was intended that every student should become either a farmer or a mechanic, when the design comprehended not only instruction for those who hold the plow or follow a trade, but such instruction as any person might need — with all the world before them where to choose — and without the exclusion of those who might prefer to adhere to the classics."

The report of the Survey states further: "There is no question and there never has been any question that the land-grant university may very properly and is to considerable degree obligated to offer to students opportunities for the general education which it is the purpose of arts and sciences to give." * * * "The Interior Department which administers the Morrill Act has never shown any disposition to restrict State control over the offerings of its own higher educational institutions in the fields of arts and sciences." * * * "All but 10 States interpret the Morrill-Nelson Acts to carry as clear an obligation to maintain collegiate instruction in the arts and sciences as to maintain instruction in agriculture or mechanic arts."

Proceeding from such general observations as these, the report gives in very great details the facts and statistics showing the present status of the organization, methods and results of the kind of education which has developed at these colleges. It will serve for years to come as the general authoritative reference book dealing with the problems which confront the administrative officers of the several states and their educational systems, in so far as they relate to state-supported higher education.

Placement Training for Stockbridge School Students

The six months' period of placement training for students in the Stockbridge School required between the first and second instruction periods on the campus is a unique and effective part of the plan for the instruction of these students. I have received from Mr. Grayson, Supervisor of Placement Training, a statement

which describes admirably the purposes and methods of this plan, some parts of which I am sure will be of general interest and I am, therefore, quoting them as a part of this report.

"The placement training period extends from April first, or slightly before in some cases, to about the first of October of the freshman year. Perhaps it might better be called a work period, a practical experience period, or a trial period. During these six months the students are scattered throughout the state, and a few in bordering states, working at various occupations to gain practical experience and to earn a little money towards defraying the expenses of the second or senior year.

"There are several advantages to be gained from this training period, both to the students and to the faculty. In the first place, it serves as a kind of sorting out process, both as regards men and as regards their choice of majors. It offers a student an opportunity of trial to find out if he is fitted for the work he has chosen. It is cheaper in time and money to discover this after spending only six months in school, than to find it out after having invested two years. The training period also has the advantage of keeping the students in the work habit; they don't forget how to work or lose the desire to work. Also, the experience in the field during training is of great value to the students in comprehending and understanding the class work of the senior year.

"There are seven vocations in which a student may major. Animal Husbandry offers two types of placement. The student who has a farm background is usually employed on a larger specialized dairy farm, doing barn work with the stock under the herdsman, and gets experience in livestock management, breeding, record-making, etc. Then there is the placement on smaller more general farms carrying some cows for the men who have little or no background in farming, or who prefer that type of training. These men get a wider range of work including some livestock work, and considerable work in the fields with hay, corn, potatoes, and other cash crops.

"The men taking Dairy Manufactures are employed in ice cream or milk plants or a combination of both, depending on their wishes. Flower Growing placements are generally with commercial growers, usually having carnations or roses as the main crop. A few men of this group are employed each year by specialists in outside flowers such as annuals and perennials. Also, there are two or three men placed on private estates under the gardener.

"Horticulture has really two divisions for purposes of placing the men. The smaller division consists of the students taking the greenkeeping course, and these are placed on golf courses, where they do general maintenance work, and possibly some construction or remodelling work. The larger group, majoring in general horticulture, take their training in a variety of places, such as nurseries, private estates, parks, cemeteries, and with landscape contractors, the placement depending on the desires and aims of the individual student.

"Men who take Fruit Growing, Vegetable Gardening, and Poultry Raising are placed with specialists in their respective fields. In Poultry Raising there is some choice, depending on the type of poultry work the student wishes to follow. For instance, a man might prefer a place where he would secure training in trapnesting and pedigree work, whereas another student might be interested solely in egg production for market.

"Each year a few boys desire to take placement at home for various reasons. As a rule it is found better for a student to spend this six months away from home, even though he plans to be employed on the home farm after finishing the course. This statement is based on the experience of students who have already taken the course. The supervisor tries to discourage home placements, but if the parents request it in writing it is usually granted provided the reasons given are sufficient to warrant it.

"Although this six months placement training is educational in purpose, students are expected to earn and receive a reasonable wage. The supervisor feels that often times the men are influenced about a job more by the wage offered than by the training possibilities. The reason for this lies in the fact that many of our students must earn as much as possible during this period, in order to help defray

the expenses of the senior year. Our men have saved as much as \$400 in the six months, but the average is from \$175 to \$300. The farm jobs pay by the month; board, room, and sometimes washing are usually part of the wages. Most of these students receive from \$40 to \$50 a month plus maintenance. One or two receive as high as \$65 or even \$70 in normal years. On the other types of jobs which do not include maintenance, they are given a weekly wage. The range of this wage is between \$18 and \$28 a week. The average cost to a student for maintenance is about \$10 a week, slightly more in the cities.

"The supervisor visits each student two or three times during the six months, planning to call on everyone working in the state during the first month or six weeks, as most of the needs for adjustment and minor difficulties arise early in the training period. Men placed out of state, numbering about 15% each year, are visited by the supervisor only once. Some three or four men that are employed a considerable distance away are not paid any official visit. When a training student does have some serious difficulty on the job he is supposed to get in touch with the supervisor at once, who, as soon as possible, will call at the place of employment and talk the whole matter over with the student and with the employer, in order to find out where the fault lies, if any. The trouble usually can be straightened out and the student will complete his training there. In the event that the student cannot continue work for his present employer, the supervisor must decide what course to follow in fairness to the student, the employer and the school. If the fault is unquestionably with the student, he is failed in placement training and will not be allowed to return to the school for his senior year. He may be allowed to repeat his placement the next season, and, if satisfactorily completed, may then return for the senior year. Seldom are more than two or three men failed in placement by the supervisor in a single season. Several others do not return for the senior year, but they do so of their own accord and for various reasons. Adjustments are required for five or six per cent of the training students during the six months. The practical experience on the job in the middle of the educational program has proven a very effective method of instruction for the vocational courses of the Stockbridge School."

A similar placement training service is conducted for the few girl students in the Stockbridge School under the supervision of Miss Margaret Hamlin, Vocational Counselor for Women.

PROBLEMS AND POLICIES

PROBLEMS OF INCREASED ENROLLMENT

The situation with reference to increasing enrollment of students has been described earlier in this report. While these facts are interesting, it is the problems raised by prospective future growth which most engage us. I have said in the past and our present experience indicates that this College could accommodate approximately 1,200 students with few additions to its teaching staff and only minor additions to its laboratory and class room facilities. Our total enrollment in all resident courses this year has reached 1,356 students and it is very evident that we cannot go much beyond this figure without substantial increase in teaching staff, class room and housing facilities.

Needs of Teaching Staff

In all freshman required courses we are carrying two more sections this year than last with the same permanent staff. Sophomore required courses similarly have largely increased enrollment due to last year's large entering class. If the freshman class of next year is the same size as that of this year, we will have a net gain of approximately 175 students, due to the fact that we shall graduate a relatively small senior class. We have agreed to a program of stringent financial economy for the current year and will try to carry our program next fall with the addition of only one new additional teacher and some temporary assistants. However, it should be understood that this is possible only as a temporary measure and that a permanent program must involve either an increase in our teaching staff or a limitation of student enrollment.

Class Room Needs

Additional sections and larger classes have taxed our class room and laboratory facilities to the limit. Further growth in enrollment will require the provision of additional facilities. Such proposals in our building program as the building for Landscape Architecture and the Administration Building are calculated to relieve this pressure and their need is becoming increasingly urgent.

Housing

As I have pointed out, it was necessary this year to stop the enrollment of women students in July because of lack of housing facilities. The following table indicates how women students are being housed this year, in accordance with the principle that they must be accommodated in college dormitories or in approved and supervised off-campus houses.

UNDERGRADUATE WOMEN STUDENTS ENROLLED IN COLLEGE
AND STOCKBRIDGE SCHOOL

Place of Residence	1932	1933	1934	1935	Special	Stockbridge	Totals
Abigail Adams	19	25	34	24	—	—	102
Draper Hall	—	1	0	6	—	5	12
Homestead	4	1	0	1	—	—	6
Working for room and board	1	1	3	3	1	—	9
Living at home	4	3	11	9	1	1	29
Off-campus residences	1	1	3	41	—	6	52
Totals	29	32	51	84	2	12	210

At meetings of the Women's Advisory Council and the Trustee Committee on Faculty and Program of Study held during the fall I presented the following questions as bearing upon the problem of housing of women students.

- "1. Shall the enrollment of women students be limited on the basis of some percentage distribution between sexes?"
2. Shall it be limited to those who can be accommodated in college controlled houses, or in these plus privately-owned houses which are under college regulation as to social and sanitary conditions, or shall women students be admitted on the same basis as men students are?"
3. Shall freshman women or upper class women be given preference in college dormitories?"
4. If freshman women occupy college dormitories, how can assurance be given that adequate suitable rooms for upper class women will be available? By additional dormitories, by sorority houses, by 'cooperative houses,' by stimulation of landladies to admit more women? Is it possible to estimate the number of upper class women who can be thus accommodated far enough in advance so that freshman enrollment each year can be limited to remaining available rooms?"
5. How can additional rooms for women be provided?"

Both groups answered the first question in the negative. In answer to number two they agreed that the enrollment of women students should be limited to those who can be accommodated in college controlled houses plus privately-owned houses which are under college regulation as to social and sanitary conditions. The Trustee Committee postponed its answers to questions three, four and five in order to give further study to the matter.

If the Trustees are agreed to adopt as their continuing policy the plan just mentioned, it is quite evident that enrollment will have to be strictly limited until additional accommodations are made available. This may mean the limitation of next year's freshman women to fifty as compared with eighty-four this year. I do not believe that any considerable number of additional accommodations can be found in privately-owned houses.

It seems to me that the construction of dormitories is the only practical solution to our problem. These may be built either as a private enterprise off-campus or on campus as a private benefaction to the College or as a college enterprise with

state appropriations. While I believe there is some possibility that private capital might be induced to erect off-campus dormitories, I doubt the advisability of college administrative officers offering inducements or even encouraging business men to undertake such an enterprise because we cannot know what future developments may be and should not be in any position of responsibility for the success of such a private enterprise. The possibility of private benefactions to the College for the purpose of providing dormitories is a delightful prospect and should have every encouragement. However, it is, I fear, too intangible to allow us to place much dependence upon it as a solution of this urgent problem. There remains the possibility of meeting this need through the appropriation of state funds. I believe that the Trustees should make every effort to secure appropriations for this purpose and recommend that official action be taken to this end immediately and as an emergency state building enterprise.

In addition to the need for housing facilities for women students there is the need for such facilities for men and this phase of the problem should not be overlooked. We have adopted what has proved to be a very wise policy of housing freshman men in campus dormitories so far as accommodations are available. Our present facilities, however, take care of less than half of the class. Men students, especially those in the Stockbridge School, have to live long distances from the college campus and frequently under conditions of poor sanitary and social environment because of lack of adequate housing facilities. It is clear, therefore, that dormitories for men students are also an urgent need.

CONCLUSIONS REGARDING PROBLEMS OF INCREASED ENROLLMENT

I have pointed out that our present enrollment of resident students taxes to the limit the facilities of our teaching staff, our class room and laboratory space and our housing accommodations. In fact, the latter factor caused us to refuse admittance to a considerable number of women students this year. Further limitation will probably be necessary unless additional facilities are supplied. In facing this problem, it seems to me, that we should take a long time view of its implications. If the average rate of increase of the last eight years be considered an index for future growth, and this would seem to be a modest estimate, we can predict, in some degree, our future requirements. This would mean a growth in our degree courses from our present enrollment of 868 students to one of 1,189 in 1936 and 1,628 in 1941. On this basis enrollment in all courses of resident instruction would increase from the 1,356 at present to 1,691 in 1936 and 2,108 in 1941. These, I believe, are as reasonable estimates as can be made with our present knowledge and I think we should begin to lay our plans to deal adequately with them.

A CAMPUS PLAN

In 1911 Mr. Warren H. Manning, a landscape architect and engineer, submitted a general plan for the development of the campus of this College. This plan was adopted by the Board of Trustees and was recognized as the official plan for campus development for many years. However, changing demands and circumstances have led to its practical abandonment and none other has replaced it.

The obvious need for the expansion of physical facilities upon the campus suggests forcefully the need for a plan of development for the physical plant. Certain specific questions may need to be answered in the near future and they should be answered in terms of a long-time plan of development for the whole institution. The following may illustrate such questions as may soon need answering. Where shall increasing rooming facilities for women students be placed? What general directions will campus expansion take and how may this effect the location of the proposed administration building and the development of heating and lighting facilities? What reservations need to be made in present central locations for buildings not in the present building program but probably essential in a long-time plan? Other similar questions will at once come to mind and will indicate the need for such a plan as I have suggested.

Associated with this problem is the need for some action to prevent the development of undesirable and unsightly private business establishments at the south entrance to the campus. The present situation is quite unsatisfactory and there

are indications that it will get worse until the College takes some definite action to control the property. I would suggest the possibility of cooperation between the College and the different fraternity groups to take over all of this contiguous property at the south campus entrance for sites for fraternity houses.

The fundamental architectural and engineering principles involved in a general plan for development were thoroughly considered in the Manning plan and it seems to me that a new study at this time might accept that plan as a basis for procedure. This might avoid the necessity of employing a technical adviser for a new study.

It is my recommendation, therefore, that a committee of the faculty be appointed and authorized to study this proposition bringing its recommendations to the Trustee Committee on Buildings and Grounds as soon as they may be ready but not later than June, 1932.

SALARIES OF COLLEGE STAFF

Early last September, the heads of all departments of the College, at a meeting called for that purpose by the President, unanimously decided not to ask this year for any increases in salary for members of the staff because of the present emergency. Shortly thereafter, the Governor of the Commonwealth asked that this be the general principle with regard to all salaries of State employees in the preparation of the budget for the coming year. This principle met with approval of our Board of Trustees and was applied in the making of estimates for the current budget.

It has been proposed, however, that, as one means of public economy during the present financial stringency, the salaries of all State employees be reduced and I understand that legislation to this end has already been introduced to the General Court. I am, therefore, taking this opportunity to point out the effects such a step might have upon our teaching staff.

I think it should be recalled first that the teaching profession in general and our own college staff in particular have been upon a relatively low salary scale. Anyone who has been associated with college teachers during the past fifteen years knows the economic struggles through which most of them have been in order to maintain a reasonable standard of living. And this has been a period of general prosperity when industrial and business incomes were high.

The relatively low standard of our salary scale as compared to that of other similar institutions elsewhere was recognized at the time of the classification of State employees in 1926 and 1927 and through that classification our situation has been much improved. This has been evidenced by a noticeable improvement in the morale of the professional staff and a decrease in personnel turnover. Our present scale is only moderately favorable as compared with that of other similar institutions with which we have to compete for our professional staff. The salaries of our staff who occupy positions of assistant professor or lower are just at the median for such positions in all of the land-grant colleges of the country, but those in the upper ranks are very seriously below corresponding salaries elsewhere. A general reduction of our salary scale now would make it impossible for us to adequately replace men in important positions on our staff or to maintain a high standard of teaching ability upon our campus.

I think there can be no disagreement with the proposition that we should maintain at this College a teaching staff of highest possible standards and ability. Any step which might hinder such a program should be taken only because of dire necessity and with full realization of its probable effects.

CONCLUSION

It is evident that this report clearly shows a very healthy and happy condition of affairs on the College campus. The problems of the institution now are those which result from growing appreciation of the services which we offer. They offer a challenge to constructive imagination and enthusiastic planning which is a stimulus to active effort. May I say to you that I believe that the service which the Board of Trustees renders to the Commonwealth in administering its State College for the good of its citizens is worthy of the sincere and hearty thanks and congratulations of all those of us who know of your intelligent and unselfish efforts in this field of public service.

Further, I wish to express personally my deep appreciation and cordial thanks to the members of the Board and of the Administrative Committee of the college staff who made possible my relief from administrative responsibilities and duties during the first half of the year for a period of rest and recuperation made necessary by ill-health. I hope that I may be able to repay your kind consideration in this matter by continued service to the institution which otherwise would not have been possible.

ROScoe W. THATCHER,
President.

BUDGET FOR 1932

Considering the need for public economy this year the Trustees of the College reduced the budget estimates of State Funds for 1932 as submitted by administrative officers from \$1,079,372 to \$1,044,622, which is approximately \$1,000 less than the appropriation for 1931. The Trustees felt that by strict economy the added requirements of salary increases granted in 1931 and of the large increase in student enrollment could be met with this appropriation without serious curtailment of any of the essential functions of the institution. No provision has been made for salary increases in 1932. They agreed with administrative officers that any reduction below this figure would probably require modification and limitation of the present program.

General Maintenance

	Personal Service	Maintenance Expenses	Total
General College	\$451,370	\$98,300	\$549,670
Experiment Station	94,957	20,500	115,457
Extension Service	67,600	40,545	108,145
Waltham Field Station	4,800	7,700	12,500
Short Courses	65,090	11,100	76,190
Heat, Light and Power	—	45,000	45,000
Physical Plant Expenses	24,000	34,000	58,000
Fertilizer Control Law	11,600	3,600	15,200
Poultry Disease Law	24,500	14,000	38,500
Milk Testing Law	600	800	1,400
Commercial Feeding Stuffs Law	9,000	2,000	11,000
Seed Control Law	3,900	1,400	5,300
Laboratory Service	5,340	420	5,760
Trustee Expenses	—	1,000	1,000
Printing Reports	—	1,500	1,500
Totals	\$762,757	\$281,865	\$1,044,622
Total request for maintenance	—	—	\$1,044,622

Permanent Improvements

In their request for permanent improvements the Trustees recommend the construction of three buildings included in the five year program and estimated to cost in total, \$423,000. They also requested \$91,015 for nine projects of repair and replacement of the present physical plant. Including the usual \$5,000 for an emergency fund these requests total \$519,015.

New Buildings Urgently Needed

1. ENLARGEMENT AND RECONSTRUCTION OF LIBRARY AND EQUIPMENT OF SAME, \$175,000

As a result of a careful study of the Library needs of the College by a special committee of the faculty it is pointed out that approximately twice the present floor space is needed. For example, at present the library conveniently accommodates only 70 readers whereas provision should be made for 150 on the present

enrollment basis. No coat rooms or toilets are now provided. Book storage space is so deficient that the dirt floor basement and extra shelves to the ceilings have to be utilized and the availability of books to readers is greatly reduced. The present business office and work rooms are very inadequate.

In view of the fact that the contents of this building are estimated to be worth \$500,000, much of which could not be replaced if destroyed by fire, it is very important that the present building and the new additions be made as fireproof as possible. The method for fireproofing the present building has been specifically recommended by State Fire Inspector, Ira C. Taylor.

2. ADMINISTRATION BUILDING AND EQUIPMENT, \$150,000

This building is very much needed to provide adequate office facilities for the administrative staff of the institution which is now housed in buildings not originally constructed for this purpose and so situated as to make difficult efficient administration. The construction of an Administration Building would make it possible to liberate equivalent space in present buildings for urgently needed dormitory and classroom accommodations.

3. BUILDING FOR LANDSCAPE ARCHITECTURE, \$98,000

Student enrollment in courses in Landscape Architecture has largely increased in recent years. Present facilities are wholly inadequate and not only handicap the instruction in this subject but impose serious handicaps upon the instruction in Pomology with which department it shares classrooms and laboratories.

The solution of this problem which was suggested in the five-year building program called for the reconstruction and remodeling of the old wooden Stockbridge house at a cost of \$36,000. Since this has been declared to be unwise as a state policy the project for a new building on the site of the Stockbridge House is substituted. The Stockbridge House is in such condition of disrepair that its demolition or reconstruction is imperative.

Repairs and Replacements of Present Physical Plant

4. NEW FLOOR IN DRILL HALL, \$3,000

The under floor has rotted away so that the finish floor is loose. Something should be done right away to remedy this.

5. MACADAMIZING ROADS, \$8,500

Main campus roads should be macadamized as soon as possible. One of the important main roads was rebuilt in 1929 and it is now proposed to continue this construction from the point where it stopped in 1929 to the main highway at the north entrance to the campus, together with main connecting roads, a total distance of 1,895 feet.

6. NEW ROAD ON EAST CAMPUS, \$5,500

It is proposed to build a new road of good gravel construction which will continue the present road to the President's house and the orchards south over the brow of the hill and south westerly to the main road. Not only will this greatly improve the accessibility of the orchards and the President's house, but it will make available five building lots which it is believed can be sold to members of the faculty at a sum more than sufficient to cover the cost of this construction.

7. REBUILDING GREENHOUSES, \$4,000

The so-called upper greenhouse, one of the oldest on the campus, is in urgent need of repair. This space is needed and yet will not long be available unless the house is thoroughly renovated. Repairs are also needed to the French Hall Greenhouses which were built in 1908 and have had no major repairs since. The estimate covers both projects.

8. STEAM LINE REPLACEMENTS, \$60,000

Original steam mains are 29 years old and are in need of replacement in many places. The proposed plan embodied in this project incorporates the extension of the 14" low pressure steam main east of that point terminated by the steam main plans recently submitted during this season and at the south of Draper Hall,

650 feet along roadway to a point where the West Experiment Station and Adams Hall supply is taken off, thence with 1,500 feet of 12" main to highway, feeding East Experiment Station, thence along Stockbridge Road to a point southwest of the Physics Building, making new service connections thereto, thence with 900 feet of 8" main south, feeding Wilder, French, and Clark Halls and the Entomology Building or a total of approximately 3,700 feet of main including service laterals.

This amount of piping is planned at the figure given on the assumption that this work is carried out by the College and that 12 per cent be allowed for equipment, although there is no objection to contract work if this amount of work can be completed within the figure given.

9. EXTENSION OF WATER MAINS, \$1,015

In order to provide fire protection for Fisher Laboratory and buildings nearby and to furnish water for spraying in the orchards it is proposed to extend the present water main a distance of approximately 700 feet and install a hydrant.

10. HEATING SYSTEM AND LAVATORY AT FISHER LABORATORY, \$2,500

Fisher Laboratory is so situated that to heat the building from the central heating plant is deemed inadvisable. In order that the building may be most useful it is imperative that some heating system other than the stoves which are now being used be installed. The building contains five classrooms, two of which cannot be used during the winter because of inadequate heating facilities. The several stoves now in use also create fire hazards which would be largely overcome by the installation of a central heating plant. The estimated cost of this project includes a steam heating system completely equipped with an oil burner.

Toilet and lavatory facilities at Fisher Laboratory are decidedly inadequate for the number of students and employees who use the building. A room in the basement which was formerly used for storage purposes, but which is now obsolete for the storage of apples, can be easily remodelled into a boiler room, locker room, and lavatory. The cost of making the necessary changes in the room together with the cost of equipment for the same is included in the estimated cost of this project.

11. TILING ROOMS IN DAIRY LABORATORY, \$4,000

In 1929 the pasteurizing room was tiled and this has proved very satisfactory. It is now proposed to continue this improved dairy building construction in the receiving room, wash room and connecting hall.

12. REPAIRS TO HARLOW HOUSE, \$2,500

This house is in very urgent need of repairs. It is not now occupied and cannot be until it is repaired. It can then be profitably rented.

13. EMERGENCY FUND, \$5,000

REPORT OF THE DEAN

The Massachusetts Agricultural College, by act of the General Court, became Massachusetts State College last April. The passage of this bill which changed the name of the College was the outstanding event of the year. Its effect upon the faculty and student morale was most wholesome since it alleviated a feeling of uneasiness which pervaded the campus for a number of years. As a result the working conditions during the year were most satisfactory. Really disagreeable problems of student conduct and discipline were very few.

It is quite apparent that the college has entered upon a new period of growth. Never before has there been so much interest in the college — its courses, requirements for admission and graduation and its place in the educational system of the Commonwealth. Concrete evidence of this awakening may be found in the marked increase in the volume of correspondence — easily fifty per cent greater than two years ago — and the actual increase in student enrollment. The number of first year students accepted was three hundred and forty-five of which two hundred and eighty-eight reported for matriculation when college opened. The number not accepted was two hundred and six. This means that entrance credentials of five hundred and fifty-one candidates were reviewed and evaluated. In addition there

were one hundred and thirteen transfer students whose applications were considered. Of these twenty-nine were accepted but only twenty-two matriculated. Applications from women showed the greatest percentage of increase. After eighty-five had been accepted our available facilities were taxed to the limit and we were forced to close our list for those who desired admission in September, 1931. This was done on July 18. After that date at least seventy additional women requested consideration of their applications but all were informed that they could not be admitted unless vacancies occurred through resignations of girls already accepted. It is impossible to tell how many of these women would have actually qualified for admission but forty would be a conservative estimate. Some steps should be taken to provide more facilities for women students or if their number is to be limited their ratio to the total number of students definitely determined.

Our Freshman Dormitory plan is working very satisfactorily and I would strongly recommend that plans be made for the erection of additional dormitories sufficient to house all resident first year men and women. This would give us not only housing facilities very badly needed but also an opportunity to help the freshmen make their new adjustments quickly and easily.

This large increase in our student group has also placed an unusually heavy teaching load on some of the departments giving required courses. Fortunately arrangements could be made to carry the work this year, but it will be impossible to organize available facilities and teaching force in order to provide adequately for additional growth next year. Every effort should be made to have the required courses of the first year taught by inspiring and thoroughly capable teachers. We cannot afford to use inexperienced teachers for foundational courses. Unless additional instruction and class-room facilities can be provided, we will be forced to limit our enrollment.

Owing to unsatisfactory economic conditions many colleges experienced losses in enrollment through the failure of the students in the upper classes to return. In this respect our record was unusual. All members of the class of 1932 returned as expected. And only two students in the class of 1933 did not return for financial reasons. Losses in the membership of the class of 1934 were less than usual and none for financial reasons solely.

The one term Honor Course was given this year by Professor F. C. Sears. Seventeen students elected the course which dealt with the Frontier in American Civilization.

For "Departmental Honors Work" the following students were accepted by the Committee:

John J. Foley and Howard A. Cheney in Agricultural Economics.

Robert C. Gunness, Joseph S. Joreczak, Paul H. Ross, and Wallace W. Stuart in Chemistry.

Richard S. Folger in English.

John D. Hitchcock in Entomology.

Curtis G. Keyes in Floriculture.

John P. Cone in Landscape Architecture.

Robert C. Gunness in Physics.

William S. Fisher, Jr., in Zoology.

The freshmen advisers this year who assisted Assistant Dean Lanphear and myself were Professors Goding, Julian, Knowlton, Mack, Moore, Rand, Serex, and Skinner and Messrs. Boutelle, Briggs, and Hawley.

A rearrangement of the Freshman Week schedule made it possible to introduce the advisers to their advisees at a special assembly which was called the day after the new students registered. The faithful work of these advisers continues to be very helpful in getting freshmen started promptly and easily.

A new entrance arrangement for certain types of students described in my report last year was approved by the faculty to become effective immediately. Under this plan prospective students who gain the approval of the Entrance Committee may qualify for admission without condition by passing four examinations as follows:

Comprehensive English.

Comprehensive Mathematics.

Elementary Modern Language.

United States History or Science.

All these examinations must be written and passed during one examination period.

The student health service established at the college at the beginning of the college year 1930-31 is functioning very acceptably and effectively. It had its severest test this autumn. An epidemic of infantile paralysis was rampant in the Connecticut Valley and had not reached its peak at the time colleges were scheduled to open. Although other colleges and preparatory schools in the Valley postponed their opening date from two to three weeks, we decided to open on the scheduled date since practically all our students are from Massachusetts and were therefore not being brought from non-infected to an infected area. But it was a hazardous undertaking because of the character of the dreaded disease, and the uncertain knowledge even medical authorities have about its transmission and treatment. Every precaution possible was taken. All entering students were given a thorough physical examination and asked to report promptly any illness however slight. As a result of this vigilance the five cases which developed were detected promptly and treated effectively. All made complete recoveries and were able to return to their classes in time to finish the work of the term. It is not too much to say that without the feeling of confidence which this watchful service of Dr. Radcliffe and his associates created we could not have continued. The resultant loss to the students because of work missed through this experience alone would have been many times the cost of the service. Under normal conditions through health instruction, advisory service in case of minor illnesses, first aid assistance, and general preventive measures the actual time losses of students on account of sickness should be materially reduced.

In a college like ours every one recognizes the importance of regular attendance at all scheduled exercises. Our no-cut rule for freshmen and sophomores guarantees this for the students in these two classes. But the problem is harder for some juniors and seniors. In the practical courses of Agriculture and Horticulture especially, instructors are requesting permission to take groups of students on judging trips, and visits to farms, markets, and demonstrations—all of which have a definite educational value. But such trips always mean absences from other courses with attendant losses to the student and inconvenience to instructors. This problem is receiving some consideration now and it is hoped a satisfactory plan may be formulated in the near future.

The scholastic performance of the students showed an earnestness of purpose and real determination which is most encouraging. Deficiencies in scholarship sufficient to drop students from college were incurred by twenty-six (about ten per cent) of the members of the freshman class. Losses in the other classes through excessive failures numbered fifteen sophomores, one junior, and one senior. It is quite apparent that a feeling of real accomplishment under the direction and encouragement of interesting and competent instructors is the most effective stimulus for good work.

The events of the year have been significant and give us confidence that the type of educational opportunity which the college offers is appreciated by the citizens of the Commonwealth.

WILLIAM L. MACHMER,
Dean.

REPORT OF THE DIRECTOR OF THE GRADUATE SCHOOL

At commencement in June, 1931, thirteen advanced degrees were conferred of which nine were master of science and four doctor of philosophy. Besides these one candidate received the degree of bachelor of landscape architecture. This is the first time that the latter degree has been conferred, and while not strictly of graduate value, as is evidenced by the bachelor designation, it is granted on the basis of the equivalent of one year's work supplementary to the usual undergraduate bachelor's degree.

While there was little change in the activities of the Graduate School during this year as compared to any similar preceding period, the enrollment at the beginning of the first term of 1931 saw an increase of seventy per cent over that of the first term of 1930. This increase is of sufficient significance to arouse the enthusiasm

of those of our resident staff who are interested in a greater field of service for the State College, and should prove very stimulating to the development of the entire resident instruction program.

Although some of the influences which have operated in causing the pronounced increase in enrollment may be temporary, it is reasonable to anticipate further moderate increases because of factors of a more permanent nature, such as the change in name of the College, the more liberal offerings in courses, and the greater flexibility in general requirements. More students, especially in the field of advanced study, however, carry with them extra demands on our instructional staff, and the time may be at hand when we should consider the Graduate School an administrative factor of sufficient importance to deserve systematic study regarding trends, possibilities, and policies.

In general, the presence of more graduate students on our campus necessitates the developing and offering of new and advanced courses and assignments to satisfy the degree and especially the thesis requirements. These demands should encourage the spirit of research in the institution and promote a progressive, active, and alert attitude on the part of the entire teaching faculty. This in itself is adequate justification for the liberal support of the Graduate School. There is, however, another and a better reason for encouraging graduate work. The time is here when men and women of more than undergraduate grade are being demanded in industry, and especially in education both secondary and collegiate; and since it is in these pursuits that many of our students seek employment, liberal provision should be made for this supplementary education if the State College is to retain its enviable position in this field of service.

That much of the interest in graduate work comes from those in or entering the teaching profession is evidenced by the fact that practically one-third of the total enrollment in the Graduate School is registered as majoring in education. It would seem that Massachusetts State College, because of its curriculum and ideals, should be especially well equipped to render a specific service in assisting teachers to better prepare themselves for the presentation of subject matter in agriculture, home economics, and the sciences.

Matters that deserve earnest consideration of the administration in the development of the Graduate School are tuition, time of residence, definition of residence, and increase in major and minor offerings.

Under our present regulations graduate students pay no tuition, laboratory or student health fees, while these amount to \$25.50 per term for all resident undergraduates. This consideration when first extended was no doubt intended as a form of subsidy to encourage enrollments in the Graduate School. Now that a stage of development has been reached where such encouragement is no longer as necessary, it would seem consistent to require the same fee from graduate students also. A regulation to this effect is recommended.

At present the credit requirements for the master of science degree are the equivalent of one and a half years of study of which at least one year must be in residence. This requirement is fifty per cent higher than for practically all other land grant colleges. It is desirable that we conform to what is considered common or standard practice, and this requirement should be changed to one year of graduate study, most of which should be in residence.

All attempts to define residence have been so unsatisfactory that it is questionable whether absolute regulations can be adhered to with any degree of justice. Certainly such regulations should be based on the values of residence. Since the values of residence in their very nature vary with the type of student and the specific conditions under which the work is carried, it would seem that beyond certain general regulations which could be readily justified for all students the definition of residence should provide for sufficient flexibility to permit the director or the student's advisory committee, or both, to exercise their judgment.

The growth of the institution and the increased facilities for study in its several departments makes it desirable to increase from time to time the scope of the Graduate School. This is accomplished by extending to departments not formerly included in the Graduate School organization the privilege of offering courses for graduate credit when it becomes evident that the kind and quality of work in such

departments is of graduate grade. On this basis the department of horticultural manufactures has qualified and a major in this subject is recommended for approval. It is also recommended that the privilege of offering courses toward a minor be extended to economics, English, floriculture, French, German, and geology.

The plan now in operation which provides \$9,000 of State funds per year for the support of graduate assistants who are appointed to give half-time service to the institution with the privilege of devoting the other half to graduate study is proving very satisfactory. These assistantships, fifteen in number, are distributed according to a plan designed for promoting the best service of the institution in its teaching and research program, and for providing students with the opportunity for advanced work in those departments where adequate facilities for graduate work are available. They are as follows:

Agricultural Economics	1
Agronomy	2
Bacteriology	2
Chemistry	4
Education	2
Entomology	1
Landscape Architecture	2
Poultry Husbandry	1

This arrangement is proving so efficient and satisfactory that should the recommendation to require a tuition fee of all graduate students meet approval it would seem the part of wisdom to devote, either directly or otherwise, revenues derived from this source to supplementing the financial support at present available for graduate assistants. This would allow for an increase in the number of graduate assistants and therefore an extension of a service greatly needed to partially relieve the heavier teaching load resulting from recent increases in both graduate and undergraduate student enrollment.

The provision for graduate assistants has proved exceptionally fruitful in the case of foreign exchange students. The State College has at present its fourth student under this arrangement. All of these men took their graduate work in the field of agronomy in some German university and came here after they had satisfied the requirements for the doctorate degree. They have without exception been men of outstanding training and splendid character, well qualified to render a much worth while service. It is hoped that this arrangement may be continued, or better still, extended to other nationalities and to a wider range of subject matter.

F. J. SIEVERS,
Director of Graduate School

REPORT OF THE DIRECTOR OF SHORT COURSES

Enrollment of Stockbridge School

Enrollment figures in the Stockbridge School of Agriculture for 1931-32 are the largest we have had in the last ten years and, with two exceptions, mark the heaviest registration the School has ever experienced. The current trends in business and industry probably account largely for the increasing number of students seeking specialized training in the fields of agriculture and horticulture. Beginning with 1929 this increase has continued steadily without recession. The enrollment record for the fourteen years of the School's history is as follows:

1918-19	1919-20	1920-21	1921-22	1922-23
37	209	277	293	257
1923-24	1924-25	1925-26	1926-27	1927-28
169	161	189	165	206
1928-29	1929-30	1930-31	1931-32	
242	222	240	272	

In the present year's enrollment, one hundred and fifty-nine students are registered in the first year class (including seven girls) and one hundred and thirteen in the second year (including five girls).

This marked increase in numbers has made it necessary to change the operating program of the School in several respects. Under college regulations all first year students (both School and College) are required to eat in the College Dining Hall, but this year, for the first time in the history of the College, table capacity for the incoming classes was inadequate. Therefore it became necessary to rearrange the assigned hours of meals for Stockbridge students and a new schedule was drawn up, as follows: Stockbridge classes now begin at 7.30 A. M. and continue until 11.30 A. M. providing four class periods in the morning; and classes are held from 12.30 noon until 4.05 or 4.50 in the afternoon. As now operating, our Stockbridge students have breakfast from 6.45-7.20, dinner 11.30-12.20, and supper 5.30-6.20.

This year, too, the increasing number of students in the degree courses tended to absorb much of the room capacity in the choicer locations, nearest the campus, and home owners, naturally, were more desirous of renting their rooms for the longer period of the college term, as contrasted with the six months session of the Stockbridge freshmen. This situation has always presented a problem which can only be solved by enlisting larger numbers of householders in more remote locations from the campus. Fortunately, a little advertising in the local paper brought more than a sufficient number of responses to meet our increased needs. Many of these rooms are located a mile to a mile and a half away from the College Campus, however.

One disagreeable feature growing out of this dining hall schedule and early class hour program is the apparent lack of any suitable meeting place, either in or near the Dining Hall, to take care of our students immediately after their meals and before the morning or afternoon classes start. During fair and warm weather the problem does not develop because our ample outdoor spaces are attractive. But on stormy or wintry days, especially following breakfast, there is a period of twenty or thirty minutes which students find almost lost time because no library or reading room facilities are available until 8.00 A. M. Some relief for this awkward situation has been afforded by an earlier opening of Stockbridge Hall, but the basement facilities of the men's washroom do not seem to solve the problem rightly, nor to relieve us from some possible criticism so long as this emergency arrangement has to exist.

Placement Training (Stockbridge)

From the report of the Supervisor of Placement Training I am submitting certain information of interest.

1931 SUMMER PLACEMENT OF STUDENTS

MAJOR COURSE	Number Placed	Failed or did not complete work	Lost time to be made up next summer	Placement completed but did not return
Animal Husbandry	19	2	1	—
Dairy Manufactures	14	1	1	—
Poultry Husbandry	16	2	—	1
Fruit Growing	14	1	—	—
Floriculture	14	1	—	—
Horticulture	37	2	3	1
Vegetable Gardening	5	1	—	1
Totals	119	10	5	3

Note: One student, Horace Guidoboni, was lost through accidental death caused by his automobile being struck by a train at a grade crossing on the Cape.

It was anticipated that there might be a large number of trainees who would not return to school this fall, due to shortage of funds, as the students received smaller wages on placement this season than had been paid for a number of years. Contrary to expectations, however, a larger percentage than ever enrolled for the second year. Only three men students, eligible to continue the course, failed to do so. Students were distributed on placement jobs in the various states as follows:

State	No. of Students	State	No. of Students
Massachusetts	95	Connecticut	10
New York	5	Vermont	5
New Hampshire	1	Rhode Island	1
Pennsylvania	1	Germany	1

For the first time in our history one of our students took his apprentice training in another country, under conditions wholly foreign to the practices he will later follow here. But the opportunity was such an unusual one it was felt the educational gains would offset the vocational losses.

To secure these placements, interview prospective employers, and carry on the prescribed supervision, the placement supervisor travelled 11,596 miles, practically all in the State, at a total expense of \$1,387.50.

Economic distress, coupled with the tendency of employers to get along with less labor, made the 1931 placement season most difficult for the securing of positions for student trainees. It was only after continued endeavor by the supervisor that he succeeded in placing every student on a job by the second week in April.

Seventeen seniors, graduating last June, returned to positions where they had taken placement training. This explains part of the loss in placement positions each year. More and more students seem to realize they will be assured of a job when they graduate if they make an excellent record on placement. Of seventy-five men students in the last class graduated, fifty-four have secured positions in the field of their special training.

Personnel Work in General

Graduate and summer placement for college men was disappointing. Many industries seeking students for summer or permanent employment were this year forced to give up their customary procedure altogether. In past years representatives from many companies came to the placement office to interview seniors for employment; this year not a single one visited the College. The total placement of graduates through this office was less than for the last three years.

In the division of agriculture placements were only slightly less than normal; in the division of horticulture, about half normal; and for business and industry, no placements were available.

Summer School

The course offerings of the summer school continue to reflect the increasing demand by teachers for professional training work. For the first time in five years a pronounced increase in enrollment was observed. Enrollment figures covering this period are 1927 — 149, 1928 — 165, 1929 — 159, 1930 — 155, 1931 — 189.

1931 Enrollment Data

Students registered in Graduate School	48
Number of undergraduate students (Massachusetts State College)	41
“ “ “ (Other colleges)	29
“ “ teachers	90
“ “ colleges represented	25
“ “ Normal Schools represented	7

It will be noted from the number of teachers registered that this group comprises one-half of the total attendance.

New courses in Philosophy, English, and History were well filled.

Winter School

Registration was again well maintained for the various Winter School short courses held from January to March, 1930. Greenkeeping is still a unique and popular course and no other college in the country offers such a complete program of study in the special problems of this field. Enrollment in this course has to be rigorously limited and all students are carefully selected.

ENROLLMENT FIGURES

Total Enrollment 1931 Winter School	86
“ “ for 10 Week Courses	43
“ “ “ 5 Day Courses	43

COURSE ENROLLMENT

General Farming Course	14
Greenkeeping Course	15
Poultry Course	13
Special	1

In the 5 Day Dairy Courses the advantage of short intensive units is demonstrated by the very definite response to these offerings by employed workers who can secure leave for a short period of training.

5-Day Course Attendance

Milk and Cream Testing	23
Milk Plant Operation	20
Ice Cream Course — Beginners	22
Ice Cream Course — Advanced	25

Many of these students stay right through the full month, taking the complete series while others, with limited time, may take only one or two units at most.

It is planned to offer several new short courses on this 5-day or 10-day program for 1932 by departments which have not previously made use of this scheme.

ROLAND H. VERBECK,
Director of Short Courses.

REPORT OF THE LIBRARIAN

The Library now contains 91,302 regularly catalogued books, besides considerable numbers of uncatalogued ones. The number of bound books added during the year was 3,523, the number discarded, 137, making a net gain of 3,486 — a gain of fifty books over the additions of the year before. Department libraries now number 44.

The Library has been kept open for study, and for borrowing, 341 days. During the academic year the building is open, and service is maintained fourteen hours per week day, and five hours on Sundays. There have been loaned for use outside the building 10,848 volumes, and 977 pamphlets, exclusive of reserved books taken out for overnight use. The months of largest circulation were February, April, May and January, during which books and pamphlets were borrowed respectively as follows: February, 1,430 books, 155 pamphlets; April, 1,280 and 87; May, 1,237 and 80; and January, 1,199 and 154.

Over five hundred periodicals, and many other serials, are received and filed ready for instant consultation.

A striking event of the past year for the Library was the preparation of plans for the proposed enlargement of the building. It was hoped that funds would be forthcoming to provide the space so greatly and so long needed for additional book storage, more reading rooms, and larger office space. To this end considerable attention and study was given, and a considerable portion of the less used printed matter was actually moved and stored in other college buildings. It now begins to seem that the enforced delay of long cherished hopes may be a gain, since there seems probability that better provision may be made for the urgent need for more space.

Steady progress has been made throughout the year in the great task of revising the pamphlet collection of the Library, and this has resulted in a considerable reduction in the quantity maintained on the shelves, and in getting what is retained in better order, catalogued, and in the hands of those who need this material. It is believed that this improved system may be maintained in the future with simultaneous saving in labor and improvement in service.

A great step forward has been taken with regard to the handling of books reserved for reading collateral with regular courses. As in most colleges, there has been difficulty of various kinds in this matter. By two votes, one in the Spring and one in the Fall, the students, on their own initiative, have assumed responsibility for the proper maintenance of these books on the honor system. This is to be administered by the honor council, and involves replacing by classes of such books as are missing. In the judgment of the librarian this is perhaps the greatest gain made by the library since its founding.

The Librarian wishes again to express his gratitude to the Library Committee or their steady aid to the interests of the Library.

B. B. WOOD,
Librarian.

REPORT OF THE DIRECTOR OF THE EXTENSION SERVICE

Our state and county extension workers, during 1931, have endeavored to emphasize more than ever those phases of their projects which would be of greatest assistance to farmers and homemakers in solving their economic problems. The large numbers of people participating in extension educational opportunities manifests a realization of the value and benefits which are being derived by those engaged in farming, homemaking, and in the case of 4-H club members those preparing for adult responsibilities.

Improvements in organizing and planning on the part of staff members and additional funds from federal sources being used to employ and pay the expenses of new specialists has made it possible to meet many more opportunities for service in the field of extension education. Our specialists and county workers are carrying professional improvement work in order to be better prepared to meet the changing and exacting demands made upon them to give the fullest and latest information and instruction in their respective fields. They recognize the importance of not only keeping up-to-date on all the latest and best subject matter, but also being equipped to teach by the most effective methods.

Other members of the college staff have given freely of their time to conduct many group meetings. Their assistance has made it possible to meet the requests of county agents that would otherwise have been impossible. In several instances, members of the U. S. D. A. Extension Service have given valuable assistance.

Excellent cooperation with five radio stations of the state has made available a total of approximately 1½ hours a day for the dissemination of agricultural and home economics information. For a part of this program, our Publicity Department has prepared daily Farm Flashes which include fifteen minutes of news items.

News releases of an informational nature have been put on a regular schedule, this service going to approximately 100 small town dailies and weeklies. Items regarding student, college, and Extension Service activities are released to a state-wide list, or to individual papers as the case may be. The publications of the Extension Service have continued as in previous years with 19 old leaflets being revised and 7 new ones added. Many individuals who are not reached directly by some phase of extension teaching are requesting our publications.

The largest group on record, estimated at 4,000, attended the 13th annual Farm and Home Week at which about 90 speakers presented subjects of vital interest in solving the present day problems. The demand by the county offices for small unit exhibits resulted in from one to eight of the 23 exhibits prepared by the college being shown at 25 fairs. The project of assisting committees in small communities of the state in preparing their programs has necessitated an increased demand for Program Hints, a monthly service containing educational, inspirational, and recreational material.

Agriculture

Evidence of the resourcefulness of Massachusetts farmers is shown by their activities during this period of low farm income and low commodity prices. These activities are characterized by a willingness to study all available information relating to the farm business, and to organize their work through regional and district committees in order to plan and carry out adjustments needed in their business.

An excellent illustration is furnished by the work of the Connecticut Valley Improvement Committee, made up of leading farmers and business men in the center of a large agricultural community. This committee requested assistance and information from the Extension Service, devised and published plans for adjusting the farming business to present day conditions, and the work was carried out by committees on marketing onions, marketing potatoes, and by county agents in the counties involved. Members of the central committee have conferred

with representatives of the State Bureau of Markets and the U. S. Bureau of Agricultural Economics concerning special reports on prices and stocks on hand of tobacco. The committee made definite and helpful recommendations on the handling and care of this crop in order to improve quality. Through their recommendations and conferences with specialists, the possibility of cutting the cost of production has been attempted by the use of more economical fertilizers.

In other sections of the state, local committees have been active in planning and assisting educational efforts to adjust farm business. In Essex County, a county dairy committee has been active for several years, and the program which they have developed and carried through was awarded first prize in a contest at the National Dairy Show.

This activity on the part of the farmers themselves has placed a responsibility on the Extension Service of furnishing more adequate information on the business organization of farms and the development of reliable information relative to marketing in order that crops may be efficiently distributed.

Agricultural Economics

A most important line of work during the year has been the collection and analysis of facts and information for farmers' groups who are attempting to work out methods of readjusting their systems of farming and marketing in order to meet changing market conditions and to secure maximum farm incomes. As opportunities have presented themselves, cooperative marketing associations have been assisted in determining plans of organization and developing their system of operation. In several cases this has amounted to pioneering in completely new methods of cooperative merchandising. Products handled by organizations served include vegetables, raspberries, blueberries, strawberries, and eggs.

Agricultural outlook material and current economic information have been prepared and distributed throughout the year. The New England Outlook report, state outlook reports, Farm Economic Facts, special commodity marketing releases, publicity articles, monthly radio broadcasts, price situation meetings and outlook meetings, all have been utilized for the distribution of economic information on apples, dairy products, potatoes, poultry and eggs, vegetables, tobacco and onions.

Agricultural Engineering

Through the cooperation of the Federal Bureau of Agricultural Engineering, Plant Quarantine and Control Administration, demonstrations of the control of corn borer by means of machinery were held which were attended by nearly 1,000 people. The nature of the demonstration work was first to show how existing machinery could be adapted to the control by a minor expenditure, and an ordinary garden or meadow hoe could be twisted and substituted for a corn knife. Plowing demonstrations were held in several of the corn growing counties, the object being to plow fairly deep and to effect a complete coverage of all stalks, stubble, weeds, and other débris in which the corn borer might hibernate.

Agronomy

Farmers have been urged to lower production costs of market and feed crops by adjustment of practices and by intelligent choice of the newer forms of low price fertilizer. Most outstanding in the field of feed crop production has been the development of pastures as the principal source of the feed crop for summer. Apart from a widespread effort by most dairymen to fertilize suitable areas of rough pasture land, the most significant phase has been the creation of grazing areas under intensive management on land hitherto used only for harvested crops. A satisfactory increase in seedings of legumes for hay is anticipated from preliminary reports. Certain synthetic forms of fertilizer, attractive in price, and with which demonstrations have been repeated on potatoes, vegetables, and grass crops, trebled in volume of sale this past year, due in some small measure at least to extension teaching. Already a number of potato yields over 400 bushels per acre (the highest 488 to date) have been dug by members of the 300-Bushel Club.

Animal Husbandry

The proved sire program has been under way since the first of the year and to date forty-two sires have been listed for proving. Steps are now being taken to check these and obtain about ten more, following which records on as many daughters as possible will be secured. Fifty dairy farm surveys have been taken. These include questions on the herd, disease, farm crops, sanitation, marketing and receipts. Assistance has been rendered in the organizing of a county dairymen's association in each county. These were later federated into a reorganized Massachusetts Dairymen's Association of approximately 1,000 members. Progress has been made in eradication of bovine tuberculosis in spite of a shortage of funds. The advisory committee of the Division of Animal Industry has succeeded in getting emphasis placed on the area plan of testing. The Herd Improvement Associations have had an average of more than 6,300 cows on test.

Farm Management

From a summary of cost records taken on market garden farms during the summer of 1930, vegetable growers have been supplied with production requirement information useful in production planning. By applying current prices to these unit requirements, cost of production figures have also been determined for 15 different vegetable crops and this information has been useful to market gardeners in choosing crops to grow.

Poultrymen, orchardists and potato growers have been keeping cost records which are providing information relative to production costs and economics in production methods. The information obtained from these records is analyzed and the summaries are placed before large numbers of those engaged in the production of the several commodities so that they may determine where adjustments may be made that will increase their net returns.

In addition to distributing the New England and State Agricultural Outlook reports, fifteen situation meetings were held with 800 poultrymen and sixteen with 560 dairymen.

Plant Pathology

Timely spray information was furnished apple growers during the critical period for scab infection, through telephone calls, circular letters, and by frequent radio messages, based upon a detailed study of the development of scab fungus, of the weather conditions, and of a special report furnished by the Boston Office of the U. S. Weather Bureau.

Diseases of tomatoes were controlled by sterilizing the soil in which seedling plants were grown and by sterilizing the seed. This was accomplished in three different fields, under careful supervision, so that the results were definite and reliable. Meetings and talks on the treatment of vegetable seeds were held and circulars were issued to supplement the lectures and meetings. Many requests were answered to diagnose diseases of plants which were sent to this office. Nine meetings were attended and talks given on the diseases of onions, tobacco, potatoes and vegetables. A crop disease survey was conducted in about 50 towns.

Pomology

A new apple grading law went into effect this year, requiring many adjustments on the part of the growers. To assist in reaching the exact requirements of this law, a chart was prepared, showing the different classes and their requirements.

The 90% clean apple club was conducted again for the third season. This popular organization had applications from over 200 growers, but less than 20 were able to meet the rigid requirements of the production of 300 bushels of one variety, 90% of which were to be free from insect or disease injury. The instruction given on the farms at the time the fruit is counted is of vital importance to the fruit growers. The result of the inspection at each farm is tabulated with that of all the other farms, so that an exact record is given of the results of spraying in terms of diseases of insects uncontrolled. This information is furnished to all fruit growers in the state at winter meetings.

A series of apple maggot demonstrations have been conducted and a high percentage of clean fruit secured, where previously the product was worthless. A series of spraying demonstrations was conducted with apple and cranberry growers, stressing the need of adequate equipment and thorough application.

Poultry

Introduction of the semi-scald method of picking poultry and the demonstration of better methods of dressing and packaging have greatly increased the direct trade, producer to consumer, as well as the delivery of satisfactory dressed poultry to wholesale markets. The price differential in favor of dressed poultry is large. The wide adoption of this practice was accomplished through 24 demonstrations, having an attendance of over 1,000 poultrymen, by two radio talks, one series of Farm Flashes and a publicity article having local circulation of approximately 100,000 copies.

Chicken pastures are a new development which places emphasis upon labor economy and health protection in addition to food value. Several pasture demonstrations on farms were arranged from which to get a spread of influence and local teaching material. Five groups of poultrymen have been made acquainted with the rather technical subject, Genetics of Egg Production. These groups have proved well adapted for handling the technical subject matter.

Fowl pox vaccination has become almost a universal practice with commercial poultrymen. Lighting hen houses to maintain production during the early fall months is being more generally adopted, especially by poultrymen who sell at retail and hence see the need of uniform supply to meet market demands.

Rodent Control

The control of rodents is being accomplished through the cooperation of the U. S. Biological Survey. An unusually successful campaign was conducted on October 30th. The 11,791 packages of prepared bait for the campaign were made at Barnstable under the supervision of the Biological Survey.

Storage

The farm refrigerated storages for apples have continued to return a profit to those who own them. Definite records on a number of those installed, through the assistance of the Extension Service, prove this point beyond a doubt. As this fact becomes better known to growers, the demand for assistance in planning farm cold storages increases. New ones have been erected this year and others are being planned.

Home Economics

More emphasis has been laid upon the economic phases of homemaking, especially with the groups on a low income level. The following topics indicate the trend: Our Money's Worth, Nourishing Foods at Smaller Cost, New Clothes from Old.

In an effort to reach more homemakers during the past year, in addition to the organized study groups in nutrition, clothing, child development and parent education, home management (including the planning for leisure) the following methods were used by the state staff: 1. Broadcasting — a home economics weekly forum; 2. Mothers' Service Letters — timely subject matter letters prepared by the specialists were sent to mothers of young children who are unable to attend meetings; 3. A co-ordinated program in nutrition, gardening and food preservation, through which homemakers received seasonal information in the planning and planting of their home gardens, and in the canning of the products for home use.

Through studies of local conditions in a few communities, we have been able to help leaders to interpret the findings of the White House Conference material. In preparation for this piece of community planning, a conference of the officers of the educational agencies of the state met at the college last June.

Child Development and Parent Education

In the child development project, an effort has been made to understand the child's basic needs and how to adjust the material and personal environment to meet those needs in order that the child may more nearly approach his maximum development. Emphasis has been laid upon the importance of the early years as the foundation years for health and character development. For this reason, the majority of the members of our groups are mothers of young children. In order to reach larger numbers of parents, it was necessary in six counties to present the subject matter to leaders, who in turn passed it on to small groups in their communities.

Clothing

The underlying motive has been to help the homemaker of limited means to clothe herself and family presentably, with a minimum expenditure of money, time, and effort. This year's acute need for making the dollar reach has exerted unusual pressure, resulting in an increased emphasis of all projects on wise buying, and major programs in five counties for the purpose of teaching mothers to make the right kind of clothing for their children at a minimum cost. One leader group reports buying mill ends, renovating old materials and making 1,788 such garments with cost ranging from nothing per garment to about one-half the cost of the ready-made article. Single meetings in the "New Clothes from Old" project have been carried in every county, reaching more women than last year, and remodeling nearly twice as many old garments.

Food Preservation

Doubling of the effort in food preservation work by the addition of a temporary worker for eight weeks during the summer with a resultant large increase in the amount of home canning was the important development in the co-operative project in horticultural manufactures and home economics. In one county, 24 meetings were held in 24 communities in six days, with an average attendance of approximately 30 and reaching, by those present, 53 communities.

Home Grounds

The two outstanding developments in this program are: (1) Garden Schools — These have been arranged with small groups in various centers of the counties. Neighboring towns have sent representatives to these meetings. These groups are making plans for the development of their own home grounds and for the development of community centers. (2) Demonstrations — Practical demonstrations in planting, drainage, and grading have been given to groups of homemakers.

Home Management

Special emphasis has been given to the importance of making the most of the facilities that are available in the home. The use of the time of the unemployed members of the family makes possible long contemplated improvements which add to the attractiveness of the home, and to the satisfaction of the family group. Planning the use of time, money, and effort in order to have more time for creative and productive activities, leisure time for rest, recreation and participation in community advancement, has been an important part of the home management program. Assistance has been given to rural homemakers who are contributing to the family income through some form of home industries, such as tourist homes, tea rooms, handicraft, and canned goods.

Nutrition

Although economy in food purchasing has always been emphasized because of financial conditions during the past year, keeping down the cost has been the keynote of all nutrition projects. Planting gardens which supply a large proportion of necessary vegetables, and canning and storing the surplus have been stressed. Efforts have been made to reach larger numbers of mothers of young children through leader training and community meetings. Cooperating with the extension editor, a series of nutrition letters is being sent out to the daily and weekly papers. These emphasize nourishing food at less cost.

Use of Leisure Time

The economic condition all over the state has brought a great deal of free time to people. Our objective has been not only to help people to make a living, but also to live well.

Two studies are being made in different counties, in cooperation with the homemakers, to determine the needs of the people. As a result of one of these surveys, four community groups have asked for assistance in organizing a community recreation program for adults as well as children. In another county, five playgrounds are being equipped as a result of meetings with a representative community group.

4-H Club Work

This year's slogan for 4-H club members has been, "Use what you have in your home — don't ask your parents for money." As a result, the members have learned the value of economy in their project work. In order to carry on this program, older club member leadership has had to be developed. One undertaking was the establishment of a week's training camp at the college, made up of two older club members from each county who studied the theory and practical applications of leadership, followed by their acting as councilors in Camp Gilbert. The program for Camp Gilbert was completely reorganized with emphasis placed on nature and handicraft work. 4-H service clubs are now organized in nine of the counties of the state. Music appreciation and health work have both occupied an important part on the club program.

Boys' Club Work

The dairy, poultry, garden, fruit, handicraft, and forestry projects have occupied the attention of the boys enrolled. A larger number of dairy club members own purebred animals. Among the dairy honors won were the National Essay Contest on the production of clean milk, the National Demonstration Contest, and the showing of the champion Guernsey animal in the 4-H classes at the National Dairy Show. There has been a gradual increase of enrollment in the poultry project with a very large percentage of older club members staying in the work. Approximately 4,000 members had excellent gardens this past summer, with the majority raising enough vegetables for the home as well as some to sell. Many organizations offered prizes for this club work. Stress in the handicraft project was on the repairing and making of new articles out of old. Several counties have carried on very successful fruit clubs and three counties have accomplished considerable in forestry work, particularly in tree identification, thinning and planting.

Girls' Club Work

Food, canning, clothing, room improvement and the home decoration project interested the girls. The value of health foods was stressed. Older girls' club meetings were conducted in six of the counties. Canning work, linked up with gardens, claimed new interest the past season. Remaking of clothing and the state-wide dress contest were popular. Many girls renovated their rooms at minimum cost and made many useful and inexpensive articles. One girl reported that 229 people have visited her room since it was redecorated. Counties reporting show an increased enrollment and per cent of finish over last year.

WILLARD A. MUNSON,
Director of Extension Service.

REPORT OF THE TREASURER

There is submitted herewith the annual report of the Treasurer for the year ending November 30, 1931.

The total income from all sources, including State, Federal, and Trust funds was \$1,882,878.20. We expended \$1,665,455.26, leaving a balance of \$217,422.94. An analysis of these figures is given below:

	State Appropriation	Federal Appropriation	Total Appropriation	Expenditures	Balance
College	\$645,954 64	\$70,459 42	\$716,414 06	\$666,161 28	\$50,252 78
Experiment Station	106,914 80	99,219 48	206,134 28	196,654 69	9,479 59
Extension Service	109,010 04	91,065 44	200,075 48	176,982 71	23,092 77
Short Courses	73,908 00	—	73,908 00	74,936 62	—1,028 62
Waltham Field Station	16,301 60	—	16,301 60	16,257 84	43 76
Control Laws	80,681 73	—	80,681 73	79,159 54	1,522 19
Trustee Travel	1,200 00	—	1,200 00	690 63	509 37
Printing Reports	2,289 69	—	2,289 69	2,013 70	275 99
Replacements	20,578 80	—	20,578 80	19,676 66	902 14
Special Building Projects	182,910 15	—	182,910 15	145,346 18	37,563 97
	\$1,239,749 45	\$260,744 34	\$1,500,493 79	\$1,377,879 85	\$122,613 94
<i>Trust Funds</i>					
Student Loans	—	—	16,377 69	9,595 25	6,782 44
Endowments	—	—	26,167 32	7,101 50	19,065 82
Other Funds	—	—	339,839 40	270,878 66	68,960 74
	—	—	\$1,882,878 20	\$1,665,455 26	\$217,422 94

The College appropriation of State funds for current expenses was \$1,045,460. Of this amount, there was brought forward from the last fiscal year \$11,379.30 with which to pay bills that were incurred in the previous year, making the total available for the year, \$1,056,839.30. The expenditures for the College were \$1,029,478.32, leaving an unexpended balance of \$27,360.98. This balance, however, will be used to pay for fuel necessary to carry the College to April 1, 1932, estimated at \$16,550. There are other bills that were incurred but not paid for previous to November 30, 1931. These accounts are as follows:

Fuel account	\$16,550 00
College accounts	4,375 48
Experiment Station accounts	1,161 25
Extension Service accounts	145 00
Short Course accounts	155 00

\$22,386 73

This leaves a net balance of \$4,974.25 which reverts to the State.

Special appropriations made by the Legislature for the year 1931 amounted to \$31,000, of which \$4,000 was for special emergency work, including Lumber Shed \$2,500.00 and Timber and Forest Work \$1,500.00. A statement of the expenditures of special appropriation funds, including those that were appropriated in previous years, is as follows:

	Appropriation Unexpended	Expenditures to date	Balance of Appropriation
1929 Building for Horticultural Manu- factures	\$271 17	\$74 81	\$196 36
1929 Abattoir for Animal Husbandry	605 17	317 78	287 39
1929 Market Garden Field Station	95 07	50 88	44 19
1930 Emergency Needs	1,497 84	820 44	677 40
1930 Platform Scales	195 89	15 75	180 14
1930 Building for Physical Education	143,294 99	132,668 25	10,626 74
1930 Remodeling North College	767 84	337 10	430 74
1930 Addition to Fisher Laboratory	1,026 59	902 37	124 22
1930 Water Main	4,155 59	1,443 72	2,711 87
1931 Lumber Shed	2,500 00	2,287 87	212 13
1931 Timber and Forest Work	1,500 00	672 98	827 02
1931 Emergency Needs	5,000 00	1,500 00	3,500 00
1931 Renewal Steam Line	15,000 00	300 00	14,700 00
1931 Improvements Drill Hall	4,000 00	3,954 23	45 77
1931 Automatic Stoker	3,000 00	—	3,000 00
	\$182,910 15	\$145,346 18	\$37,563 97

The receipts of the Institution for the year were \$271,549.37, an increase of \$10,520.16 over the previous year. This increase was almost entirely due to the increased attendance of students at the College.

The inventory of the College shows a value of \$3,248,473.52, an increase of \$249,815.92 over the preceding year.

Our Endowment funds were increased during the last year by gifts aggregating \$4,000.00 from Dr. Joel E. Goldthwait, bringing the total amount of the Vincent Goldthwait Loan Fund to \$5,175.00. This is used as a loan fund principally for the students of the Stockbridge School of Agriculture. These Endowment funds now amount to \$143,926.60.

An examination of the account of the Institution for the year ending November 30, 1930, was made under the direction of the State Auditor. The Endowment funds were audited by the Trustee auditor, Mr. Frank Gerrett.

A complete statement of all receipts and expenditures follows.

FRED C. KENNEY,
Treasurer.

STATISTICAL REPORT OF THE TREASURER

FOR THE FISCAL YEAR ENDING NOVEMBER 30, 1931
BALANCE SHEET

	Debit	Credit
<i>1930</i>		
Dec. 1. To balance on hand	\$53,987 94	
<i>1931</i>		
Nov. 30. To departmental income	271,549 34	
Nov. 30. To receipts from State Treasurer	842,125 44	
Nov. 30. To receipts from United States Treasurer	200,749 74	
Nov. 30. To bills paid by State Treasurer	340,182 75	
Nov. 30. Refunds transferred to State Treasurer		\$1,477 03
Nov. 30. Expenditures for fiscal year		1,377,879 85
Nov. 30. Income transferred to State Treasurer		271,549 34
Nov. 30. Balance on hand		57,688 99
	\$1,708,595 21	\$1,708,595 21

STATEMENT OF LEGISLATIVE APPORTIONMENT AND EXPENDITURES FOR FISCAL YEAR ENDING NOVEMBER 30, 1931, AND APPORTIONMENT REQUESTED FOR 1932

	Apportionment for Last Fiscal Year	Expenditures	Requested Apportionment for New Fiscal Year
College:			
Personal Service	\$470,024 00	\$470,834 41	\$474,370 00
Maintenance	175,930 64	149,900 21	159,300 00
	\$645,954 64	\$620,734 62	\$633,670 00
Replacements	20,578 80	19,676 66	19,000 00
Experiment Station:			
Personal Service	\$87,000 00	\$86,722 64	\$94,957 00
Maintenance	9,914 80	19,812 39	20,500 00
	106,914 80	106,535 03	115,457 00
Extension Service:			
Personal Service	\$67,000 00	\$67,384 00	\$67,600 00
Maintenance	42,010 04	42,089 68	40,545 00
	109,010 04	109,473 68	108,145 00
Short Courses:			
Personal Service	\$62,808 00	\$64,023 97	\$65,090 00
Maintenance	11,100 00	10,912 65	11,100 00
	73,908 00	74,936 62	76,190 00
Waltham Field Station:			
Personal Services	\$9,300 00	\$9,355 48	\$4,800 00
Maintenance	7,001 60	6,902 36	7,700 00
	16,301 60	16,257 84	12,500 00
Trustees' Travel	\$1,200 00	\$690 63	\$1,000 00
Printing Reports	2,289 69	2,013 70	1,500 00
	3,489 69	2,704 33	2,500 00
Feed Law	11,000 00	10,861 25	11,000 00
Fertilizer Law	15,204 25	15,022 01	15,200 00
Dairy Law	1,400 00	1,271 50	1,400 00
Poultry Disease Law	42,000 36	41,078 39	38,500 00
Seed Control Law	5,317 12	5,165 25	5,300 00
Laboratory Service	5,760 00	5,761 14	5,760 00
	80,681 73	79,159 54	77,160 00
Totals	\$1,056,839 30	\$1,029,478 32	\$1,044,622 00
Unexpended Balance		27,360 98	
		\$1,056,839 30	

CASH STATEMENT

	Other Funds	State Funds	Totals
Balance December 1, 1930	\$53,987 94	—	\$53,987 94
<i>Receipts</i>			
College receipts from students and others	—	—	83,338 09
Tuition	—	\$43,583 00	—
Laboratory fees	—	10,092 30	—
Rent	—	24,919 67	—
Other charges to students	—	4,743 12	—
Department Sales	—	—	70,308 32
Products	—	60,692 25	—
Miscellaneous	—	9,616 07	—
Experiment Station	—	—	16,161 80
Chemistry	—	620 37	—
Cranberry	—	4,570 70	—
Pomology	—	2,660 89	—
Poultry	—	5,702 04	—
Station Service	—	2,607 80	—
Extension Service	—	—	479 08
Correspondence	—	230 50	—
Miscellaneous	—	248 58	—
Short Courses	—	—	19,791 25
Student fees	—	18,806 25	—
Winter School	—	985 00	—
Waltham Field Station	—	—	295 73
Produce	—	295 73	—
Feed Law	—	21,362 35	21,362 35
Fertilizer Law	—	15,841 26	15,841 26
Dairy Law	—	1,084 99	1,084 99
Poultry Disease Law	—	41,468 72	41,468 72
Seed Control Law	—	419 50	419 50
Laboratory Service	—	—	998 25
Bacteriology	—	670 25	—
Pathology	—	328 00	—
Treasurer of the Commonwealth	—	—	842,125 44
Maintenance	—	824,732 85	—
Special appropriation	—	11,385 93	—
Endowment	3,876 66	—	—
Smith-Hughes Fund	2,130 00	—	—
Federal Government	—	—	200,749 74
Land Grant of 1862	7,300 00	—	—
Hatch Fund of 1887	15,000 00	—	—
Morrill Fund of 1890	16,666 67	—	—
Adams Fund of 1906	15,000 00	—	—
Nelson Fund of 1907	16,666 66	—	—
Smith Lever Fund of 1914	43,201 46	—	—
Purnell Fund of 1925	60,000 00	—	—
Capper Ketchum Fund of 1928	22,914 95	—	—
Additional Federal Co-operative Fund	4,000 00	—	—
Bills paid by State Treasurer	—	340,182 75	340,182 75
	\$260,744 34	\$1,447,850 87	\$1,708,595 21

PAYMENTS

	Other Funds	State Funds	Totals
<i>Expenditures</i>			
College Expenses	—	—	\$666,161 28
Personal Service	\$45,426 66	\$470,834 41	—
Maintenance	—	149,900 21	—
Replacements	—	19,676 66	19,676 66
Experiment Station	—	—	196,654 69
Personal Service	82,548 27	86,722 64	—
Maintenance	7,571 39	19,812 39	—
Extension Service	—	—	176,982 71
Personal Service	66,240 23	67,384 00	—
Maintenance	1,268 80	42,089 68	—
Short Courses	—	—	74,936 62
Personal Service	—	64,023 97	—
Maintenance	—	10,912 65	—
Waltham Field Station	—	—	16,257 84
Personal Service	—	9,355 48	—
Maintenance	—	6,902 36	—
Trustees Travel	—	690 63	690 63
Printing Reports	—	2,013 70	2,013 70
Feed Law	—	10,861 25	10,861 25
Fertilizer Law	—	15,022 01	15,022 01
Dairy Law	—	1,271 50	1,271 50
Poultry Disease Law	—	41,078 39	41,078 39
Seed Control Law	—	5,165 25	5,165 25
Laboratory Service	—	—	5,761 14
Bacteriology	—	2,879 78	—
Pathology	—	2,881 36	—
Special Appropriations	—	—	145,346 18
1929 Building for Horticulture Man- ufactures	—	74 81	—
1929 Abattoir for Animal Husbandry	—	317 78	—
1929 Greenhouses Market Garden Field Station	—	50 88	—
1930 Emergency Needs	—	820 44	—
1930 Platform Scales	—	15 75	—
1930 Building for Physical Education	—	132,668 25	—
1930 Remodeling North College	—	337 10	—
1930 Addition Fisher Laboratory	—	902 37	—
1930 Water Main	—	1,443 72	—
1931 Lumber Shed	—	2,287 87	—
1931 Timber and Forest Work	—	672 98	—
1931 Emergency Needs	—	1,500 00	—
1931 Renewal Steam Line	—	300 00	—
1931 Improvements Drill Hall	—	3,954 23	—
Income	—	271,549 34	271,549 34
Refunds to State Treasurer	—	1,477 03	1,477 03
Balance	57,688 99	—	57,688 99
	\$260,744 34	\$1,447,850 87	\$1,708,595 21

BUDGET APPROPRIATION FOR CURRENT EXPENSES FOR YEAR ENDING
NOVEMBER 30, 1931

	Appropriation	Current Year	Balance
Personal Services:			
Administration	\$38,000 00	\$37,826 82	\$173 18
Instruction	244,000 00	242,989 15	1,010 85
Maintenance:			
Departmental	64,000 00	65,826 49	—1,826 49
Farm	32,000 00	34,417 78	—2,417 78
Operating	69,000 00	66,808 23	2,191 77
Repairs Ordinary	23,024 00	22,965 94	58 06
Replacements	1,000 00	1,511 30	—511 30
Experiment Station	87,000 00	86,722 64	277 36
Fertilizer Control Law	11,600 00	11,222 84	377 16
Poultry Disease Law	23,000 00	23,709 46	—709 46
Dairy Law	600 00	547 35	52 65
Feed Control Law	9,000 00	8,628 66	371 34
Seed Control Law	3,900 00	3,800 24	99 76
Laboratory Service	5,160 00	5,325 00	—165 00
Extension Service	67,000 00	67,384 00	—384 00
Market Garden Field Station	9,300 00	9,355 48	—55 48
Short Courses	62,808 00	64,023 97	—1,215 97
Total Personal Services	\$750,392 00	\$753,065 35	—\$2,673 35
Travel	\$6,007 05	\$5,332 77	\$674 28
Office and other Expenses	32,880 18	30,854 46	2,025 72
Teaching and Laboratory Supplies	56,220 15	54,362 76	1,857 39
Minor Equipment	8,046 40	8,381 89	—335 49
Experiment Station:			
Supplies and Equipment	14,905 43	15,869 78	—964 35
Travel	3,509 37	2,669 17	840 20
Office Expenses	1,500 00	1,273 44	226 56
Extension Services:			
Supplies and Equipment	18,710 04	18,755 56	—45 52
Travel	23,300 00	23,334 12	—34 12
Market Garden Field Station	7,001 60	6,902 36	99 24
Short Courses:			
Travel	1,600 00	1,552 54	47 46
Office and other Expenses	9,500 00	9,360 11	139 89
Heat, Light and Power	55,842 06	32,203 00	23,639 06
Farm	179 30	—2,280 40	2,459 70
Repairs Ordinary	16,755 50	21,045 73	—4,290 23
Replacements	19,578 80	18,165 36	1,413 44
Fertilizer Control Law:			
Travel	1,300 00	1,163 15	136 85
Office and other Expenses	2,304 25	2,636 02	—331 77
Poultry Disease Law:			
Travel	4,500 00	2,884 26	1,615 74
Office and other Expenses	14,500 36	14,484 67	15 69
Dairy Law:			
Travel	700 00	353 07	346 93
Office and other Expenses	100 00	371 08	—271 08
Trustees Expenses	1,200 00	690 63	509 37
Printing Reports	2,289 69	2,013 70	275 99
Feed Control Law:			
Travel	700 00	428 91	271 09
Office and other Expenses	1,300 00	1,803 68	—503 68
Seed Control Law:			
Travel	—	102 91	—102 91
Office and other Expenses	1,417 12	1,262 10	155 02
Laboratory Service	600 00	436 14	163 86
Sub-total	\$306,447 30	\$276,412 97	\$30,034 33
Total Maintenance App'n	\$1,056,839 30	\$1,029,478 32	\$27,360 98

	Appropriation	Current Year	Balance
College Department:			
Dean's Office	\$13,355 00	\$13,521 01	—\$166 01
Executive Order	9,545 03	7,826 56	1,718 47
President's Office	19,835 00	19,737 24	97 76
Treasurer's Office	21,955 65	21,918 19	37 46
Agricultural Economics	7,892 00	7,820 44	71 56
Agricultural Education	8,627 67	8,628 49	— 82
Agronomy	5,061 31	5,134 91	—73 60
Animal Husbandry	5,353 36	5,343 99	9 37
Beekeeping	—	—	—
Botany	15,040 00	15,068 76	—28 76
Chemistry	23,866 50	24,533 29	—666 79
Dairying	50,631 33	51,082 28	—450 95
Economics, History and Sociology	7,493 24	7,450 65	42 59
Entomology, Zoology and Geology	20,346 28	20,287 38	58 90
Farm	34,986 58	34,825 57	161 01
Farm Management	5,885 00	5,890 56	—5 56
Floriculture	10,489 16	10,353 84	135 32
Forestry	3,590 00	3,499 48	90 52
Freshman Agriculture	1,600 00	1,601 46	—1 46
General Agriculture	1,440 00	1,440 00	—
General Expense	824 22	8,139 09	—7,314 87
General Horticulture	17,566 45	17,445 32	121 13
Graduate School	100 00	100 00	—
Grounds	11,225 92	10,432 18	793 74
Horticultural Mfg.	8,707 12	9,241 68	—534 56
Hospital	4,475 00	4,377 56	97 44
Landscape Gardening	8,510 00	8,437 56	72 44
Language and Literature	21,720 00	21,737 87	—17 87
Library	19,998 71	20,286 55	—287 84
Mathematics	7,742 50	7,630 29	112 21
Bact. and Phys.	13,693 49	13,660 73	32 76
Military Science	2,524 58	2,500 53	24 05
Mount Toby	2,400 00	2,185 79	214 21
Physical Education	22,930 48	23,931 00	—1,000 52
Physics	6,782 64	6,759 69	22 95
Operating and Maintenance	177,003 07	147,733 50	29,269 57
Pomology	11,355 00	11,447 82	—92 82
Poultry	27,301 92	25,275 88	2,026 04
Agric. Engineering	5,485 00	5,492 59	—7 59
Home Economics	14,646 00	14,489 31	156 69
Vegetable Gardening	7,930 00	7,824 19	105 81
Veterinary	4,310 00	4,205 16	104 84
Salary Surplus	1,184 03	—	1,184 03
	\$665,409 24	\$639,298 39	\$26,110 85

Experiment Station Department:

Administration	\$10,579 34	\$10,519 14	\$60 20
Agricultural Economics	150 00	149 07	93
Agricultural Engineering	2,425 00	2,424 91	09
Agronomy	5,445 00	5,434 63	10 37
Bacteriology	540 00	536 36	3 64
Botany	10,544 33	10,469 53	74 80
Chemistry	14,080 00	14,062 09	17 91
Cranberry	9,767 84	9,820 04	—52 20
Dairy Industries	500 00	356 00	143 20
Entomology	7,875 00	7,857 31	17 69
Farm Management	475 00	488 97	—13 97
Floriculture	4,880 00	4,878 70	1 30

	Appropriation	Current Year	Balance
Experiment Station Department — <i>continued.</i>			
Freight and Express	\$300 00	\$232 73	\$67 27
Landscape Gardening	100 00	94 30	5 70
Library	350 00	349 40	60
Market Garden Field Station	1,440 00	1,440 00	—
Pomology	8,480 00	8,421 19	58 81
Poultry Husbandry	10,797 07	10,600 52	196 55
Station Service	13,237 87	13,351 03	—113 16
Vegetable Gardening	5,285 00	5,286 35	—1 35
Veterinary Science	350 00	344 06	5 94
Fertilizer Control Law	15,204 25	15,022 01	182 24
Poultry Disease Law	42,000 36	41,078 39	921 97
Dairy Law	1,400 00	1,271 50	128 50
Feed Control Law	11,000 00	10,861 25	138 75
Seed Control Law	5,317 12	5,165 25	151 87
Laboratory Service	5,760 00	5,761 14	—1 14
Salary Surplus	—101 65	—	—101 65
Animal Husbandry	300 00	300 00	—
	\$188,481 53	\$186,576 67	\$1,904 86
Extension Service Department:			
Administration	\$15,168 19	\$15,529 73	—\$361 54
Agricultural Engineering	2,150 29	2,114 18	36 11
Animal Husbandry	3,721 66	3,791 52	—69 86
Child Development	3,067 77	3,240 31	—172 54
Clothing	3,433 08	3,586 35	—153 27
Co-operative Marketing	5,718 08	5,422 08	296 00
Correspondence Courses	302 80	191 07	111 73
County Agents	2,100 95	2,048 57	52 38
Crop Protection	64 67	30 24	34 43
Dairying	100 00	98 20	1 80
Exhibits	2,729 56	2,335 30	394 26
Extension Courses	6,431 60	6,188 79	242 81
Farm Management	2,849 66	2,881 95	—32 29
Forestry	51 02	7 40	43 62
Home Demonstrations	4,605 86	4,490 77	115 09
Horticultural Manufactures	4,726 18	5,152 67	—426 49
Household Management	2,717 81	2,756 43	—38 62
Junior Extension	16,040 87	15,726 70	314 17
Landscape Gardening	2,227 45	2,490 24	—262 79
Lectures	504 03	582 94	—78 91
Home Furnishing	766 57	918 42	—151 85
Nutrition	4,023 76	3,822 64	201 12
Pomology	2,673 12	2,891 37	—218 25
Poultry	2,883 72	3,079 95	—196 23
Printing	9,616 56	10,022 89	—406 33
Soils and Crops	3,722 93	3,436 16	286 77
Vegetable Gardening	835 35	746 13	89 22
Salary Surplus	—384 00	—	—384 00
Plant Pathology	4,566 70	4,549 11	17 59
Asst. H. D. A.	1,593 80	1,341 57	252 23
	\$109,010 04	\$109,473 68	—\$463 64

	Appropriation	Current Year	Balance
Miscellaneous:			
Short Courses:			
Agricultural Economics	\$2,125 00	\$2,123 72	\$1 28
Agronomy	3,845 05	3,872 58	—27 53
Animal Husbandry	3,968 88	3,998 71	—29 83
Dairying	4,370 00	4,371 72	—1 72
Entomology	50 00	51 54	—1 54
Farm Management	1,725 28	1,721 44	3 84
Floriculture	2,670 00	2,669 56	44
Forestry	25 54	17 30	8 24
General Horticulture	6,413 57	6,301 42	112 15
Home Economics	1,552 95	1,535 40	17 55
Horticultural Manufactures	400 00	398 05	1 95
Library	50 00	74 41	—24 41
Bacteriology and Physiology	2,726 81	2,719 37	7 44
Office	25,537 28	25,335 72	201 56
Physical Education	2,506 59	2,655 31	—148 72
Pomology	7,412 26	7,398 67	13 59
Poultry	1,750 00	1,728 23	21 77
Agricultural Engineering	6,179 76	6,174 71	5 05
Vegetable Gardening	1,815 00	1,788 76	26 24
Salary Surplus	—1,215 97	—	—1,215 97
Total Short Courses	\$73,908 00	\$74,936 62	—\$1,028 62
Market Garden Field Station	16,540 80	16,488 63	52 17
Trustees' Expenses	1,200 00	690 63	509 37
Printing Reports	2,289 69	2,013 70	275 99
Total Miscellaneous	\$93,938 49	\$94,129 58	\$191 09
Grand Total Maintenance Ap- propriation	\$1,056,839 30	\$1,029,478 32	\$27,360 98

Special Appropriations

	Appropriation	Expenditures to date	Balance
1929 Building for Horticultural Manu- factures	\$271 17	\$74 81	\$196 36
1929 Abattoir for Animal Husbandry	605 17	317 78	287 39
1929 Market Garden Field Station	95 07	50 88	44 19
1930 Emergency Needs	1,497 84	820 44	677 40 ¹
1930 Platform Scales	195 89	15 75	180 14
1930 Building for Physical Education	143,294 99	132,668 25	10,626 74
1930 Remodeling North College	767 84	337 10	430 74
1930 Addition Fisher Laboratory	1,026 59	902 37	124 22
1930 Water Main	4,155 59	1,443 72	2,711 87
1931 Lumber Shed	2,500 00	2,287 87	212 13
1931 Lumber Forest Work	1,500 00	672 98	827 02
1931 Emergency Needs	5,000 00	1,500 00	3,500 00
1931 Renewal Steam Line	15,000 00	300 00	14,700 00
1931 Improvements Drill Hall	4,000 00	3,954 23	45 77
1931 Automatic Stoker	3,000 00	—	3,000 00
	\$182,910 15	\$145,346 18	\$37,563 97
Less Reverted	—	—	677 40
			\$36,886 57

¹ Reverted to State Treasurer

COLLEGE BUILDINGS (ESTIMATED VALUE, 1931)

	Inventory at Beginning of Year	Per Cent deducted	Value at Beginning of Year less De- terioration	Repairs and Im- provements during Year	Total Value at Close of Fiscal Year
Adams Hall	\$116,716 94	3	\$113,215 43	\$1,551 21	\$114,766 64
Agricultural Engineering Building	13,828 07	2	13,551 51	152 14	13,703 65
Apiary	2,625 05	2	2,572 55	12 71	2,585 26
Cashier's House	2,379 52	5	2,260 54	172 50	2,433 04
Chemistry Store House	43 31	2	42 44	-	42 44
Clark Hall	58,921 00	2	57,742 58	568 28	58,310 86
Draper Hall	74,954 75	3	72,706 11	2,225 08	74,931 19
Drill Hall and Gun Shed	23,892 10	5	22,697 49	4,047 36	26,744 85
Durfee Glass House, old	13,190 51	5	12,530 98	548 44	13,079 42
Durfee Glass House, new	8,271 04	5	7,857 49	-	7,857 49
Farm Shop	337 84	3	327 70	-	327 70
Farm Bungalow No. 1	2,888 19	3	2,801 54	401 11	3,202 65
Farm Bungalow No. 2	3,856 91	3	3,741 20	25 16	3,766 36
Farm Bungalow No. 3	3,722 41	3	3,610 74	2 28	3,613 02
Farm Bungalow Garage	300 08	5	285 08	-	285 08
Farm Bull Pens and Fence	3,623 16	5	3,442 00	-	3,442 00
Farm Corn Cribs (7)	557 29	5	529 43	-	529 43
Farm Dairy Barns and Storage	27,079 32	3	26,266 94	198 46	26,465 40
Farm Horse Barn No. 1	4,638 07	3	4,498 93	169 45	4,668 38
Farm Horse Barn No. 2	5,163 87	3	5,008 95	08	5,009 03
Farm House	4,045 77	3	3,924 40	267 34	4,191 74
Farm Machinery Barn	3,187 33	3	3,091 71	6 05	3,097 76
Farm Pigery	2,361 98	3	2,291 12	10 37	2,301 49
Farm Sheep Barn	1,376 19	3	1,334 90	6 36	1,341 26
Farm Doung stock, including Iso- lation and Quarantine Barns	18,387 60	3	17,835 97	387 57	18,223 54
Fernald Hall	65,882 07	2	64,564 43	342 74	64,907 17
Fisher Laboratory	22,632 55	2	22,179 90	1,418 48	23,598 38
Flint Laboratory	71,867 64	2	70,430 29	344 08	70,774 37
French Hall	43,785 81	2	42,910 09	617 28	43,527 37
Garage (six) Farm	2,461 63	2	2,412 40	4 64	2,417 04
Goessmann Laboratory	262,648 21	2	257,305 25	2,570 65	259,965 90
Grinnell Arena and Abattoir	20,091 09	2	19,689 27	322 19	20,011 46
Grounds Tools Shed	136 00	3	131 92	-	131 92
Harlow House	1,597 36	5	1,517 49	1 05	1,518 54
Head of Division of Hort.	2,943 15	5	2,795 99	51 70	2,847 69
Home Practice House for Girls	7,894 80	5	7,500 06	214 11	7,714 17
Horticultural Barn	3,965 63	3	3,846 66	175 24	4,021 90
Horticultural Garage	1,460 57	3	1,416 75	-	1,416 75
Horticultural Tool Shed	4,383 75	3	4,252 24	1 35	4,253 59
Horticultural Open Shed	310 58	5	295 05	2 47	297 52
Horticultural Manufactures Build- ing	65,594 00	2	64,282 12	237 76	64,519 88
Horticultural Manufactures Shed	2,315 13	5	2,199 37	59 35	2,258 72
Hospital	16,411 24	2	16,083 02	272 50	16,355 52
Jewett House and Barn	2,906 90	5	2,761 55	97 55	2,859 10
Library	29,308 20	2	28,722 04	1,624 14	30,346 18
Lumber Shed	-	-	-	-	2,287 87
Mathematics Building	4,991 89	5	4,742 30	20 10	4,762 40
Memorial Hall	91,752 28	2	89,917 23	566 31	90,483 54
Microbiology Building	52,844 15	2	51,787 27	185 64	51,972 91
Military Storage	135 09	5	128 34	-	128 34
Mount Toby House and Barn	2,419 03	5	2,298 08	-	2,298 08
North Dormitory	53,139 29	2	52,076 50	847 47	52,923 97
Paige Laboratory and Stable	25,317 68	2	24,811 33	410 47	25,221 80
Physical Education Building	-	-	-	-	270,000 00
Physics Laboratory	8,763 40	5	8,325 23	55 89	8,381 12
Poultry Departments:					
No. 1, Demonstration Building	2,253 80	3	2,186 19	8 11	2,194 30
No. 2, Oil House	135 75	3	131 68	30 76	162 44
No. 3, Brooder, killing and fat- tening laboratory	2,886 69	3	2,800 09	138 90	2,938 99
No. 4, Mechanics Storage build- ing and incubator cellar	3,811 91	3	3,697 55	5 14	3,702 69
No. 5, Laying House	2,054 55	3	1,992 91	150 54	2,143 25
No. 6, Manure Shed	130 87	3	126 94	-	126 94
No. 7, Small Hen House	49 53	3	48 04	-	48 04
No. 8, Breeding House	1,296 26	3	1,247 37	-	1,247 37
No. 9, Experimental Breeding House	588 60	3	570 94	2 39	573 33
No. 10, Duck House	104 65	3	101 51	2 40	103 91
No. 11, Unit House for 200 hens.	432 37	3	419 40	-	419 40
No. 12, Unit House for 100 hens	392 41	3	380 64	-	380 64
No. 13, Hot Water Brooder	1,995 07	3	1,935 22	-	1,935 22
Power Plant and Storage Building, including coal pocket	48,757 11	2	47,781 97	1,466 58	49,248 55
President's House	15,988 40	3	15,508 75	558 45	16,067 20
South Dormitory	47,589 70	2	46,637 91	1,156 80	47,794 71
Stockbridge Hall	152,019 36	2	148,978 97	3,260 24	152,239 21
Agronomy Greenhouse and Stor- age	4,382 61	2	4,204 96	19 40	4,314 36

COLLEGE BUILDINGS (ESTIMATED VALUE) — *continued*

	Inventory at Beginning of Year	Per Cent deducted	Value at Beginning of Year less De- terioration	Repairs and Im- provements during Year	Total Value at Close of Fiscal Year
Stockbridge House	\$1,643 60	5	\$1,561 42	—	\$1,561 42
Stable for Cavalry unit	13,212 09	2	12,847 85	\$307 24	13,155 09
Blacksmith Shop	645 65	2	632 74	—	632 74
Storage Barn	2,693 90	2	2,640 02	—	2,640 02
Turbine House	16,362 44	2	16,035 19	63 59	16,098 78
Vegetable Plant House	4,778 49	5	4,539 57	96 56	4,636 13
Waltham Field Station:					
Greenhouse	27,172 43	5	25,813 81	—	25,813 81
Office and Laboratory	7,157 58	3	6,942 85	—	6,942 85
Farmhouse	5,168 21	5	4,909 80	192 86	5,102 66
Ice House	73 51	5	69 83	—	69 83
Hay Barn	3,325 00	5	3,158 75	116 35	3,275 10
Garage	1,000 00	2	980 00	—	980 00
Small Stock Barn	1,470 17	5	1,396 66	—	1,396 66
Small Shed	581 55	5	552 47	—	552 47
Waiting Station	675 77	2	662 25	—	662 25
Wilder Hall	29,566 53	2	28,975 20	176 45	29,151 65
	\$1,664,703 98	—	\$1,624,199 35	\$28,947 67	\$1,925,434 89

EXPERIMENT STATION BUILDINGS (ESTIMATED VALUE, 1931)

	Inventory at Beginning of Year	Per Cent deducted	Value at Beginning of Year less De- terioration	Repairs and Im- provements during Year	Total Value at Close of Fiscal Year
Agricultural Laboratory	\$13,824 96	2	\$13,548 46	\$986 45	\$14,534 91
Agricultural Barn	5,634 88	3	5,465 83	3 52	5,469 35
Agricultural Farmhouse	7,232 09	5	6,870 49	12 70	6,883 19
Agricultural Glasshouse	817 58	5	776 70	—	776 70
Brooks House	2,855 90	5	2,713 10	116 92	2,830 02
Brooks Barn and Sheds	6,060 01	5	5,757 01	—	5,757 01
Brooks Tobacco Barn	2,207 90	5	2,097 50	—	2,097 50
Brooks Farm Garages	340 85	3	330 62	—	330 62
Cranberry Buildings: Laboratory	5,810 92	2	5,694 70	—	5,694 70
Garage	1,269 72	2	1,244 33	—	1,244 33
Shed Storage	207 76	5	197 37	—	197 37
Pump House	134 39	5	127 67	—	127 67
Oil House	32 58	5	30 95	—	30 95
Entomological Glasshouse	411 69	5	391 11	—	391 11
Plant and Animal Chemistry Lab.	25,687 14	3	24,916 53	172 71	25,089 24
Plant and Animal Chemistry Barns	6,581 50	3	6,384 09	465 44	6,849 53
Plant and Animal Chemistry barn					
annex	1,464 35	3	1,420 42	—	1,420 42
Six Poultry Houses	603 89	3	585 77	132 85	718 62
Tillson Cottage	1,388 80	5	1,319 36	2 05	1,321 41
Tillson Barn	767 14	5	728 78	—	728 78
Tillson Poultry Houses (4) Nos. 1,					
2, 3, 4	2,694 17	3	2,614 24	35 43	2,649 67
Tillson Pullet Brooder No. 5	856 66	5	813 83	—	813 83
Tillson Hen Brooder No. 6	890 85	5	846 31	—	846 31
Tillson Summer Sheds (3) Nos. 7,					
8, 9	337 37	5	320 50	1 00	321 50
Tillson Foreman's quarters and					
Incubator cellar No. 10	6,191 75	5	5,882 16	95 95	5,978 11
	\$94,304 85	—	\$91,077 83	\$2,025 02	\$93,102 85

COLLEGE EQUIPMENT (ESTIMATED VALUE)

Administrative Division:

Dean's Office	\$2,622 20
President's Office	3,289 53
Treasurer's Office	4,321 23

Agricultural Division:

Agricultural Engineering	8,496 12
Agronomy	9,368 87
Animal Husbandry	3,895 53
Dairy Industry	27,330 61

Agricultural Division — *continued.*

Farm, including Livestock	\$64,174 06
Farm Management	2,034 13
Freshman Agriculture	166 58
Poultry	7,512 38
Home Economics	9,232 01
Dining Hall	33,028 40
Extension Service	23,124 44
General Science:	
Bacteriology and Physiology	29,533 91
Botany	27,704 20
Chemistry	36,779 12
Entomology, Zoology and Geology (includes Beekeeping)	32,242 73
Mathematics	2,216 95
Physics	14,133 62
Veterinary	13,887 65
Graduate School	253 25
Horticultural Division:	
Floriculture	25,305 90
Forestry	1,606 95
General Horticulture	8,085 69
Grounds	1,959 87
Horticultural Manufacturing	11,268 20
Landscape Architecture	5,310 07
Mt. Toby Reservation	586 32
Pomology	9,208 49
Vegetable Gardening	4,060 44
Waltham Field Station	4,530 31
Hospital	1,449 20
Language and Literature	949 52
Library	171,791 32
Memorial Hall	12,175 64
Military	2,269 30
Operating and Maintenance:	
College supplies	1,205 08
Janitor supplies	1,670 55
Fire apparatus	1,503 68
General Maintenance:	
Office	794 48
Carpentry and masonry supplies	8,508 62
Carpentry and masonry tools	5,179 34
Electrical supplies	8,869 24
Electrical tools	478 98
Electrical supplies for commencement	208 24
Heating and plumbing supplies	15,836 45
Heat and plumbing tools	3,300 27
Painting supplies	2,304 46
Painting tools	299 68
Gas Main	787 04
Steam Main	18,531 11
Lighting Lines	15,305 82
Sewer Line	11,953 21
Water Main	15,832 58
Roads and Walks	43,320 55
Power Plant:	
General Equipment	70,958 07
Tools	417 84
Fuel	4,454 46
General Agriculture	2,993 96
North College	6,319 02

Operating and Maintenance — *continued*

South College	\$2,122 90
Women's Dormitory	9,332 20
Furniture in storage	534 09
Physical Education	18,391 62
Rural Social Science:	
Agricultural Economics	1,893 20
Agricultural Education	1,847 62
Economics, History and Sociology	258 91
Short Course	2,776 75
Social Union and Trophy Room, and United Religion	766 60
Text Books	1,775 42
Total	\$896,636 78

EXPERIMENT STATION EQUIPMENT (ESTIMATED VALUE)

Agricultural Economics	\$593 45
Agricultural Engineering and Meteorological Observatory	1,245 18
Agricultural Laboratory	10,754 51
Bacteriology and Physiology	1,770 33
Botany	10,785 13
Cranberry Station	9,023 07
Director's Office	6,070 03
Entomological Laboratory and Apiary	26,172 41
Entomology at Waltham Field Station	416 57
Floriculture at Waltham Field Station	529 39
Feed and Fertilizer Law	16,269 61
Home Economics	959 74
P & A Chemistry	18,249 53
Pomology	6,204 54
Poultry	6,696 90
Poultry Disease Law	32,741 13
Seed Control Law	2,989 04
Treasurer's Office	625 00
Veterinary	2,526 90
Laboratory Service:	
Bacteriology	1,667 99
Pathology	315 47
	\$156,605 92

INVENTORY — REAL ESTATE LAND (ESTIMATED VALUE)

Angus Land	\$800 00
Allen Place	500 00
Baker Place	2,500 00
Bangs Place	2,350 00
Brooks Farm	11,000 00
Brown Land	500 00
Chambury Place	450 00
Clark Place	4,500 00
College Farm	37,000 00
Cranberry Land	16,300 00
George Cutler Trustee	2,700 00
Dickinson Land	7,850 00
Harlow Farm and Orchard	3,284 63
Hawley and Brown Places	675 00
Kellogg Place	3,368 45
Loomis Place	415 00
Louisa Baker Place	5,000 00
Mount Toby Demonstration Forest	30,000 00

Newell Farm	2,800 00
Old Creamery Place	1,000 00
Owen Farm	5,000 00
Pelham Quarry	500 00
Q. T. V. Land	12,000 00
Tillson Farm	2,950 00
Waltham Field Station	21,000 00
Wescott Land	2,250 00

\$176,693 08

College Estate (area)	705.59
Cranberry Station, Wareham (area)	28.36
Mount Toby Demonstration Forest (area)	755.27
Rifle Range	46.20
Pelham Quarry	.50
Waltham Field Station, Waltham (area)	55.39

1,591.31

SUMMARY

Land	\$176,693 08
College Buildings	1,925,434 89
College Equipment	896,636 78
Experiment Station Buildings	93,102 85
Experiment Station Equipment	156,605 92
Total	\$3,248,473 52

DINING HALL STATEMENT NOVEMBER 30, 1931

Balance Dec. 1, 1930	\$16,244 56
Outstanding Account:	
Board	122 00
Special Service	138 17
Inventory Nov. 30, 1931	5,392 42
Total Collections	\$121,092 23
Less	410 40 (1932)
	120,681 83
Total Disbursements	\$118,201 38
Outstanding Bills Nov. 30, 1931	1,668 03
Balance	22,709 57
	\$142,578 98
	\$142,578 98

Special Funds

Burnham Emergency Fund

	Market Value Dec. 1, 1931	Par Value	Income
One bond Indianapolis Water Works Sec. 5s @ 71	\$355 00	\$500 00	\$25 00
One bond Scranton Spring Brook Water Serv. 5s	730 00	1,000 00	-
Two bonds Power Corp. of New York 6½s at 96.2	1,930 00	2,000 00	130 00
Two bonds Wichita Water Co. 5s @ 87	1,740 00	2,000 00	100 00
	\$4,755 00	\$5,500 00	\$255 00
Unexpended balance Dec. 1, 1930	-	-	346 34
Narragansett Elec. Co. interest	-	-	53 32
Difference between cost and par value of bonds	-	-	137 00
Earnings on sale of bonds	-	-	52 50
Barber Fund transfer (See Finance Comm. records Jan. 13, 1930)	-	-	197 00
Jersey Central Power and Light Co. interest	-	-	28 56
	-	-	\$1,069 72
Disbursements for fiscal year ending Nov. 30, 1931	-	-	838 96
Cash on hand Nov. 30, 1931	-	-	\$230 76

Library Fund

	Market Value Dec. 1, 1931	Par Value	Income
One bond Cities Service Power and Light 5½s	\$620 00	\$1,000 00	\$55 00
Four bonds Illinois Power and Light Corp. 5s @ 81	3,240 00	4,000 00	200 00
Five bonds New York Central & Hudson River R.R. 4s @ 86	4,300 00	5,000 00	200 00
Two shares New York Central stock @ 31.2	63 00	200 00	12 00
Amherst Savings Bank deposit	175 52	175 52	8 86
Unexpended balance Dec. 1, 1930	\$8,398 52	\$10,375 52	\$475 86
Disbursements for fiscal year ending Nov. 30, 1931	—	—	\$476 26
Cash on hand Nov. 30, 1931	—	—	\$171 72

Endowed Labor Fund (Gift of a Friend of the College)

Twenty shares Amherst Water Co. @ 100	\$2,000 00	\$2,000 00	\$95 00
Two bonds Cities Service Power and Light 5½s @ 62	1,240 00	2,000 00	110 00
One bond Scranton Spring Brook Water Service 5s	730 00	1,000 00	—
One bond New York Central & Hudson River R.R. 4s	860 00	1,000 00	40 00
One bond State and Washington Building 5s	450 00	1,000 00	50 00
Two bonds Texas-Louisiana Power Co. 6s @ 32½	650 00	2,000 00	120 00
Unexpended balance Dec. 1, 1930	\$5,930 00	\$9,000 00	\$415 00
Narragansett Electric Co. interest	—	—	636 17
Earnings on sale of bonds	—	—	53 32
Unearned Premiums on bonds	—	—	70 00
Jersey Central Power and Light Co. int.	—	—	55 00
Disbursements for fiscal year ending Nov. 30, 1931	—	—	\$1,286 36
Cash on hand Nov. 30, 1931	—	—	870 36
	—	—	\$416 26

Whiting Street Scholarship Fund

One bond New York Central & Hudson River R.R. 4s	\$860 00	\$1,000 00	\$40 00
One bond Texas-Louisiana Power Co. 6s	325 00	1,000 00	60 00
Unexpended balance Dec. 1, 1930	\$1,185 00	\$2,000 00	\$100 00
Cash on hand Nov. 30, 1931	—	—	237 06
	—	—	\$337 06

Hills Fund

	Market Value Dec. 1, 1931	Par Value	Income
Ten shares Amherst Water Co. @ 100	\$1,000 00	\$1,000 00	\$47 50
Boston and Albany R.R. stock ¾ shares @ 145	526 00	362 00	31 68
One bond Indianapolis Water Works Securities 5s	710 00	1,000 00	50 00
One bond Monongahela West Penn. Publ. Service 5½s	810 00	1,000 00	55 00
One bond New Eng. Power Ass'n 5½s	770 00	1,000 00	55 00
One bond New York Central 4s	770 00	1,000 00	40 00
One bond New York Central & Hudson River 4s	860 00	1,000 00	40 00
One bond Oklahoma Gas and Elec. Co. 6s	840 00	1,000 00	60 00
Three bonds Pacific Telephone and Telegraph Co. 5s @ 102	3,060 00	3,000 00	150 00
Prudence Bonds Corp. 1 9/50 bonds 5½ @ 90	1,062 00	1,180 00	64 90
Two bonds Prudence and Co. 5½s @ 70.2	1,410 00	1,500 00	82 50
One bond State and Washington Bldgs. 5s	450 00	1,000 00	50 00
Two bonds Texas-Louisiana Power Co. 6s @ 32.2	650 00	2,000 00	120 00
Amherst Savings Bank	72 75	72 75	3 65
Unexpended balance Dec. 1, 1930	\$12,990 75	\$16,114 75	\$850 23
Narragansett Company interest	—	—	365 01
Earnings on sale of bonds	—	—	26 66
Disbursements for fiscal year ending Nov. 30, 1931	—	—	17 50
Cash on hand Nov. 30, 1931	—	—	\$1,259 40
	—	—	421 77
	—	—	\$837 63

Mary Robinson Fund

Boston and Albany R.R. stock ¾ shares	\$54 00	\$38 00	\$3 32
Prudence Bonds Corp. 41/50 bonds	738 00	820 00	45 10
Amherst Savings Bank deposit	142 00	142 00	7 18
Unexpended balance Dec. 1, 1930	\$934 00	\$1,000 00	\$55 60
Cash on hand Nov. 30, 1931	—	—	337 50
	—	—	\$393 10

Grinnell Prize Fund

	Market Value Dec. 1, 1931	Par Value	Income
Ten shares New York Central stock 31.2	\$315 00	\$1,000 00	\$60 00
Unexpended balance Dec. 1, 1930	—	—	516 87
Disbursements for prizes	—	—	\$576 87
Cash on hand Nov. 30, 1931	—	—	50 00
			\$526 87

Gassett Scholarship

One bond New York Central and Hudson River 4s	\$860 00	\$1,000 00	\$40 00
One bond Prudence and Co.	352 00	500 00	27 50
Unexpended balance Dec. 1, 1930	\$1,212 00	\$1,500 00	\$67 50
Cash on hand Nov. 30, 1931	—	—	160 67
			\$228 17

Massachusetts State College (Investment)

Five shares New York Central R.R. stock 31½	\$157 50	\$500 00	\$30 00
Unexpended balance Dec. 1, 1930	—	—	101 76
Cash on hand Nov. 30, 1931	—	—	\$131 76

Danforth Keyes Bangs Fund

Two bonds Pacific Telephone and Telegraph Co. 5s @ 102	\$2,040 00	\$2,000 00	\$100 00
One bond State and Washington Bldg. 5s	450 00	1,000 00	50 00
Two bonds Union Electric Light & Power Co. 5s @ 100	2,000 00	2,000 00	100 00
Two bonds Wichita Water Co. 5s @ 87	1,740 00	2,000 00	100 00
Interest from student loans	—	—	204 56
Unexpended balance Dec. 1, 1930	\$6,230 00	\$7,000 00	\$554 56
Narragansett Co. interest	—	—	3,221 58
Difference between cost and par value of bonds	—	—	53 31
Earnings on sale of bonds	—	—	82 00
			35 00
Total loans made to students during fiscal year, \$7,872.50	—	—	\$3,946 45
Cash received on account of student loans, \$6,785.36	—	—	—
Excess of loans over accounts paid by students	—	—	1,087 14
Cash on hand Nov. 30, 1931	—	—	\$2,859 31

John C. Cutter Fund

One bond Pacific Telephone and Telegraph Co. 5s	\$1,020 00	\$1,000 00	\$50 00
Unexpended balance Dec. 1, 1930	—	—	3 38
Disbursements for fiscal year ending Nov. 30, 1931	—	—	\$53 38
Cash on hand November 30, 1931	—	—	42 25
			\$11 13

Robert F. Pomeroy Library Fund

Two bonds Indians Hydro-Elec. Power Co. 5s @ 70	\$1,050 00	\$1,500 00	\$75 00
Unexpended balance Dec. 1, 1930	—	—	111 47
Disbursements for fiscal year ending Nov. 30, 1931	—	—	\$186 47
Cash on hand Nov. 30, 1931	—	—	106 35
			\$80 12

William R. Sessions Fund

Three bonds Indianapolis Water Works Sec. 5s at 71	\$1,775 00	\$2,500 00	\$125 00
Five shares New York Central stock at 31½	157 50	500 00	30 00
One bond Power Corp. of N. Y. 5½s	790 00	1,000 00	55 00
One bond Texas Power and Light 5s	870 00	1,000 00	25 00
Unexpended balance Dec. 1, 1930	\$3,592 50	\$5,000 00	\$235 00
Southern Illinois Light and Power Co. interest	—	—	98 00
Difference between cost and par value of bonds	—	—	30 00
Barber Fund transfer (See Finance Comm. records 1/13/30)	—	—	42 00
			53 00
Disbursements for fiscal year ending Nov. 30, 1931	—	—	\$458 00
Cash on hand Nov. 30, 1931	—	—	135 62
			\$322 38

Alvord Dairy Scholarship Fund

	Market Value Dec. 1, 1931	Par Value	Income
One bond Indianapolis Water Works Sec. 5s	\$710 00	\$1,000 00	\$50 00
One bond Scranton Spring Brook Water Service 5s	730 00	1,000 00	—
Two bonds New England Power Ass'n 5½s at 77	1,540 00	2,000 00	110 00
	\$2,980 00	\$4,000 00	\$160 00
Unexpended balance Dec. 1, 1930	—	—	\$816 58
Amherst Savings Bank interest	—	—	25 32
Jersey Central Power and Light interest	—	—	57 13
Unearned premium on bonds	—	—	55 00
Profit on sale of bonds	—	—	35 00
	—	—	\$1,149 03
Disbursements for fiscal year ending Nov. 30, 1931	—	—	562 36
	—	—	\$586 67
Cash on hand Nov. 30, 1931	—	—	

J. D. W. French Fund

Two bonds Scranton-Spring Brook Water Serv. 5s @ 73	\$1,460 00	\$2,000 00	—
Two bonds New England Power Ass'n 5½s @ 77	1,540 00	2,000 00	\$110 00
Four bonds Oklahoma Gas and Electric Co. 6s @ 84	3,360 00	4,000 00	240 00
Two bonds Texas Power and Light 6s @ 87	1,740 00	2,000 00	50 00
	\$8,100 00	\$10,000 00	\$400 00
Unexpended balance Dec. 1, 1930	—	—	958 71
Amherst Savings Bank Interest	—	—	25 31
Southern Illinois Power and Light Co. interest	—	—	60 00
Jersey Central Power and Light Co. interest	—	—	114 26
Difference between cost of par value of bonds	—	—	194 00
Earnings on sale of bonds	—	—	70 00
	—	—	\$1,822 28
Disbursements for fiscal year ending Nov. 30, 1931	—	—	456 66
	—	—	\$1,365 62
Cash on hand Nov. 30, 1931	—	—	

F. G. Crane Fund

Five bonds Florida Power Corp. 5½s @ 65	\$3,250 00	\$5,000 00	\$275 00
Five bonds Illinois Power & Light Corp. 6s @ 87	4,350 00	5,000 00	300 00
Five bonds Scranton Spring Brook Water Service 5s @ 73	3,650 00	5,000 00	—
Four bonds Monongahela West Pen. Pub. Service 5½s @ 81	3,240 00	4,000 00	220 00
Four bonds Northern New York Util. 6s @ 97	3,880 00	4,000 00	240 00
Two bonds Power Corp. of N. Y. 6s @ 96½	1,930 00	2,000 00	130 00
Amherst Savings Bank deposit	250 00	250 00	12 65
	\$20,550 00	\$25,250 00	\$1,177 65
Unexpended balance Dec. 1, 1930	—	—	2,325 87
Jersey Central Power and Light Co. interest	—	—	285 64
Unearned premium on bonds	—	—	275 00
Profit on sale of bonds	—	—	175 00
	—	—	\$4,239 16
Cash scholarships	—	—	1,381 80
	—	—	\$2,857 36
Cash on hand on Nov. 30, 1931	—	—	

Charles A. Gleason Fund

Five bonds Prudence & Co. 5½s @ 70½	\$3,525 00	\$5,000 00	\$275 00
Interest from student loans	—	—	6 35
	—	—	\$281 35
Unexpended balance Dec. 1, 1930	—	—	870 22
	—	—	\$1,151 57
Total loans made to students during fiscal year, \$318.25	—	—	—
Cash received on account of student loans, \$408.25	—	—	—
Excess of accounts paid over loans made to students	—	—	90 00
	—	—	\$1,241 57
Cash on hand Nov. 30, 1931	—	—	

Porter L. Newton Fund

Eight bonds Brown Co. 5½s @ 48	\$3,840 00	\$8,000 00	\$440 00
Five bonds Illinois Power and Light Corp. 5½s @ 82	4,100 00	5,000 00	275 00
Five bonds Puget Sound Power and Light 5½s @ 86½	4,325 00	5,000 00	275 00
Five bonds Virginia Electric and Power Co. 6s @ 96	4,800 00	5,000 00	250 00
Amherst Savings Bank deposit	411 33	411 33	20 81
	\$17,476 33	\$23,411 33	\$1,260 81
Unexpended balance Dec. 1, 1930	—	—	1,190 63
	—	—	2,451 44
Cash scholarships	—	—	1,460 00
	—	—	\$991 44
Cash on hand Nov. 30, 1931	—	—	

George H. Barber Fund

	Market Value Dec. 1, 1931	Par Value	Income
Five bonds Florida Power and Light Co. 5s @ 77	\$3,850 00	\$5,000 00	\$250 00
Disbursements for fiscal year ending Nov. 30, 1931	—	—	250 00
	—	—	—

Helen A. Whittier Scholarships

One bond Cities Serv. Power and Light Co. 5½s	\$620 00	\$1,000 00	\$55 00
One bond Gatineau Power 5s	710 00	1,000 00	50 00
One bond Illinois Power and Light Corp. 6s	870 00	1,000 00	60 00
	\$2,200 00	\$3,000 00	\$165 00
Unexpended balance Dec. 1, 1930	—	—	155 28
	—	—	\$320 28
Cash scholarships	—	—	150 00
	—	—	\$170 28
Cash on hand Nov. 30, 1931	—	—	

TRUST ACCOUNT

Massachusetts State College — Student Loan Fund

Total amount of gift	\$500 00	\$500 00	—
Total loans	—	307 00	—
Amount available for loans	—	\$193 00	—
Unexpended balance Dec. 1, 1930	—	—	\$81 76
Interest from loans	—	—	7 97
	—	—	\$89 73

4-H Club for Boys

Total amount of gift	\$1,000 00	\$1,000 00	—
Total loans	—	—	—
Amount available for loans	—	\$1,000 00	—
Interest from loans	—	—	\$54 59

4-H Club for Girls

Total amount of gift	\$100 00	\$100 00	—
Interest from loans	—	—	\$16 45

Vincent Goldthwait Loan

Total amount of gift	\$5,175 00	\$5,175 00	—
Total loans	—	998 00	—
Amount available for loans	—	\$4,177 00	—
Interest from loans	—	—	60

Summary

M. S. C. Club — Student Loan Fund	—	\$282 73	—
4-H Club for Boys	—	1,054 59	—
4-H Club for Girls	—	116 45	—
Vincent Goldthwait Loan	—	4,352 60	—
	—	\$5,806 37	—

Outstanding Notes

M. S. C. Club	\$307 00
4-H Club for Boys	—
4-H Club for Girls	—
Vincent Goldthwait	823 00
	\$1,130 00

SUMMARY OF BALANCE ON HAND OF THE INCOME FROM FUNDS HELD IN TRUST
BY THE MASS. STATE COLLEGE

Burnham Emergency Fund	\$230 76
Library Fund	171 72
Endowed Labor Fund	416 26
Whiting Street Scholarship Fund	337 06

Hills Fund	\$837 63
Mary Robinson Fund	393 10
Grinnell Prize Fund	526 87
Gassett Scholarship	228 17
Massachusetts State College Investment Fund	131 76
Danforth Keyes Bangs Fund	2,859 31
John C. Cutter Fund	11 13
Robert F. Pomeroy Library Fund	80 12
William R. Sessions Fund	322 38
Alvord Dairy Scholarship Fund	586 67
J. D. W. French Fund	1,365 62
F. G. Crane Fund	2,857 36
Charles A. Gleason Fund	1,241 57
Porter L. Newton Fund	991 44
George H. Barber Fund	—
Helen A. Whittier Scholarship	170 28
	\$13,759 21
M. S. C. Club	282 73
4-H Club for Boys	1,054 59
4-H Club for Girls	116 45
Vincent Goldthwait Fund	4,177 60
	\$19,390 58

I hereby certify that I have this day examined the special funds of the Massachusetts State College as reported by the Treasurer, Fred C. Kenney, for the year ending November 30, 1931. All bonds and investments are as represented in the Treasurer's report. All disbursements are properly vouched for, and all cash balances are found to be correct.

FRANK K. GERRETT,
Auditor.

History of Special Funds

Burnham Emergency Fund. — A bequest of \$5,000 from T. O. H. P. Burnham of Boston made without any conditions. The Trustees of the College have used this fund in any cases of emergency where other funds were not available. At present the fund is intact and the income only has been used for such emergency matters as the Trustees have authorized. On account of the accumulation of income of this fund, the Trustees of the College authorized \$500 of this income to be added to the principal. The fund now shows an investment of \$5,500.

Library Fund. — The library of the College at the present time contains 91,000 volumes. The income from this fund, raised by the alumni and others, is devoted to its increase, and additions are made from time to time as the needs of the different departments require. Dec. 27, 1883, William Knowlton gave \$2,000; Jan. 1, 1894, Charles L. Flint gave \$1,000; and in 1887 Elizur Smith of Lee, Mass., gave \$1,315. These were the largest bequests and the total now amounts to \$10,375.52.

Endowed Labor Fund. — Gift of a friend of the College in 1901, income of which is to be used for the assistance of needy and deserving students; \$9,000. On account of the accumulation of the income of this fund, the Trustees of the College authorized \$4,000 of this income to be added to the principal.

Whiting Street Scholarship Fund. — Gift of Whiting Street of Northampton. This fund is used exclusively for scholarships; \$2,000. On account of the accumulation of income of this fund, the Trustees of the College authorized \$1,000 of this income to be added to the principal.

Hills Fund. — Gift of Leonard M. and Henry Hills of Amherst, Mass., in 1867, to establish and maintain a botanic garden, \$16,114.75. On account of the accumulation of income of this fund, the Trustees of the College authorized \$6,000 of this income to be added to the principal.

Mary Robinson Fund. — Gift of Miss Mary Robinson of Medfield, in 1874, for scholarships, \$1,000.

Grinnell Prize Fund. — Gift of Hon. Wm. Claflin, to be known as the Grinnell Agricultural Prize, to be given to the two members of the graduating class who may pass the best oral and written examination in theory and practice of agriculture, given in honor of George B. Grinnell of New York, \$1,000.

Gassett Scholarship Fund. — Gift of Henry Gassett of Boston, the income to be used for scholarships; \$1,500. On account of the accumulation of income of this fund, the Trustees of the College authorized \$500 of this to be added to the principal.

Massachusetts State College Investment Fund. — Investment made by vote of Trustees in 1893 to purchase one share of New York Central and Hudson River Railroad stock. The income from this fund has been allowed to accumulate; \$500. On account of the accumulation of the income of this fund, the Trustees of the College authorized \$400 of this income to be added to the principal.

Danforth Keyes Bangs Fund. — Gift of Louisa A. Baker of Amherst, Mass., April 14, 1909, the income thereof to be used annually in aiding poor, industrious, and deserving students to obtain an education in said College; \$7,000. On account of the accumulation of the income of this fund, the Trustees of the College authorized \$1,000 of this income to be added to the principal.

John C. Cutter Fund. — Gift of Dr. John C. Cutter of Worcester, Mass., an alumnus of the College who died in August, 1909; to be invested by the Trustees and the income to be annually used for the purchase of books on hygiene; \$1,000.

Alvord Dairy Scholarship Fund. — Gift of Henry E. Alvord, who was the first instructor in military tactics, 1869-71, and professor of agriculture, 1885-87, at this Institution. The income of this fund is to be applied to the support of any worthy student of said College, graduate or postgraduate, who may be making a specialty of the study of dairy husbandry (broadly considered), with the intention of becoming an investigator, teacher, or special practitioner in connection with the dairy industry, provided that no benefits arising from such fund shall at any time be applied to any person who then uses tobacco in any form, or fermented or spirituous beverages, or is known to have done so within one year next preceding; \$4,000.

William R. Sessions Fund. — In accordance with the request of my deceased wife, Clara Markham Sessions, made in her last will, I bequeath to the Trustees of the Massachusetts Agricultural College, Amherst, Mass., the sum of \$5,000, it being the amount received by me from the estate of the said Clara Markham Sessions, the said \$5,000 to be kept by the said trustees a perpetual fund, the income from which shall be for the use of the Massachusetts Agricultural College; and according to the further request of my deceased wife, made in her last will, this is to be known as the William R. Sessions fund, and is to be a memorial of William R. Sessions; and it is my special request that the said trustees shall make record of the fact that this fund came from the estate of my deceased wife, Clara Markham Sessions, in accordance with her request made in her last will; \$5,000.

J. D. W. French Fund. — Gift of the Bay State Agricultural Society of Boston, Mass. This fund to be known as the J. D. W. French fund, and the Trustees of the Massachusetts Agricultural College are to use the income of this fund where it will do the greatest good, in the interest of Dairying and its allies, also in Forestry, as scholarships, loans, or prizes; especially to help pay the expenses of the judging teams to the National Dairy Shows and to the National Livestock Shows; \$10,000.

Frederick G. Crane Fund. — Gift of Frederick G. Crane of Dalton, Mass. The income of this fund is to be expended by the Trustees of the Massachusetts Agricultural College in aid of worthy undergraduates of limited resources at the College, preference being given to residents of Berkshire County; such payments are to be known as the Frederick G. Crane Scholarships; \$25,250.

Massachusetts Agricultural Club Fund. — The Massachusetts Agricultural Club gave \$500 to the Massachusetts State College to be used as scholarship loan fund, to help out deserving students who intend seriously to go into agriculture; interest on loans not to be charged until after graduation, \$500.

Charles A. Gleason Fund. — A gift of Charles A. Gleason of North Brookfield, Mass., a Trustee of the College from 1889 to his death, September 29, 1925. "A clean record of noble deeds." This fund is to be used as the Trustees of the College shall direct; \$5,000.

Porter L. Newton Educational Fund. — The income of this fund is to be used by the administrative officers of the Massachusetts State College as Scholarships for the education of such citizens of the United States as said trustees may deem worthy and deserving of the same, such education to be along agricultural lines, it being the intention of this gift to do something which may tend to improve the general agricultural situation in Massachusetts; \$23,411.33.

4-H Club Loan Fund for Boys. — Given by the Massachusetts Society for the Promotion of Agriculture to be used as a loan fund to help worthy boys, especially those formerly members of 4-H clubs, to obtain a general education at the Massachusetts State College. Such loans are to be made according to the general business practice, with interest, and all notes to mature within two years after graduation; \$1,000.

4-H Club Loan Fund for Girls. — It is the wish of the administrative officers of the Massachusetts 4-H Club for Girls that this fund be increased largely by future donations. The first contribution is from Mrs. J. J. Storrow of Boston, Mass., \$100. This is to be used as loan fund for girls desiring a general education at the Massachusetts State College and is to be loaned on the same basis as the 4-H Club Loan Fund for Boys; \$100.

George H. Barber Fund. — The income of this fund is to be used annually for the encouragement of general athletics, among the student body as a whole, in such manner as shall be designated by the President of the College; \$5,000.

Robert F. Pomeroy Library Fund. — This is a gift of \$1,500 from Ellen Pomeroy Moore established in memory of her brother, Robert F. Pomeroy of the Class of 1894. The income is to be used for the purpose of promoting and replenishing the Horticultural and Landscape Gardening section of the College Library; \$1,500.

Helen A. Whittier Memorial Fund. — Given by the Massachusetts State Federation of Women's Clubs for the purpose of establishing scholarships in "Art as Applied to Living", income only to be used; \$3,000.

Vincent Goldthwait Loan Fund. — Gift of Dr. Joel E. Goldthwait of Boston, Massachusetts, given in honor of his son Vincent Goldthwait, who died in 1922. This fund is to be used as a loan fund for students of the Stockbridge School and those in the regular four-year course. No interest is charged students obtaining these loans until after maturity, when the rate of interest is 4%. \$4,000 of this fund was received in 1931; \$5,175.

Total of special funds, \$143,926.60.

FRED C. KENNEY,
Treasurer.

STATISTICS

TABLE I. — NEW APPOINTMENTS

A. In the Academic Departments

Professor of Horticulture: Lyle L. Blundell, B.S. in Land. Arch., Iowa State College, 1924.

Assistant Professor of Home Economics: Mildred Briggs, A.B., DePauw University, 1920; M.S., Iowa State College, 1925.

Technical Assistant in Bacteriology: Aldis E. Flint.

Instructor in Botany: Constantine J. Gilgut, B.S., Massachusetts State College, 1931.

Junior Library Assistant, Herbert A. Goodell, B.S., Massachusetts Agricultural College, 1930.

Junior Clerk and Stenographer, Dean's Office: Mrs. Edith R. Lacroix.

Assistant Professor of Animal Husbandry and Superintendent of Farm: Clarence H. Parsons, B.S., Massachusetts Agricultural College, 1927.

Laboratory Assistant in Chemistry: Bryan C. Redmon, B.S., University of Kentucky, 1930.

Instructor in Physical Education: Joseph R. Rogers, Jr.

Instructor in Spanish and French: Donald E. Stofflet, A.B., Lafayette College, 1930; A.M., Lafayette, 1930.

Assistant Professor of Physical Education: Melvin H. Taube, B.S., Purdue University, 1926.

Instructor in English: Frederick S. Troy, B.S., Massachusetts State College, 1931.
 Assistant Professor of Zoology: Herbert E. Warfel, A.B., Western State College of
 Colorado, 1927; M.S., Oklahoma University, 1931.
 Junior Clerk and Stenographer, Department of Horticulture: Katherine R. White.

B. In the Experiment Station

Research Professor of Agronomy: Walter S. Eisenmenger, B.S., Bucknell University, 1912; M.S., Bucknell, 1915; A.M., Columbia, 1923; Ph.D., Columbia, 1928.
 Senior Clerk and Stenographer, Department of Botany: Dorothy H. Higgins.
 Assistant Research Professor of Dairying: William S. Mueller, B.S., University of Illinois, 1927; M.S., Rutgers, 1928.
 Laboratory Assistant in Home Economics: Madaline V. Voorneveld, B.S., Framingham Normal, 1928.
 Assistant Research Professor of Home Economics: Bernice C. Wait, B.S., McKendree College, 1914; M.S., University of Illinois, 1917; Ph.D., University of Chicago, 1930.
 Assistant Research Professor of Vegetable Gardening: Robert E. Young, B.S.A., Oklahoma Agricultural and Mechanical College, 1930; M.S., Ohio State University, 1931.

C. In the Control Service

Laboratory Assistant in Seed Control: Margaret Nagle.
 Laboratory Assistant in Poultry Disease Control: Felicia Zimnoski.

D. In the Extension Service

Extension Editor: John C. Baker, B.S.A., Purdue University, 1930.
 Senior Clerk and Stenographer: Irene E. Chandler.
 Assistant Extension Specialist in Horticulture: Arnold M. Davis, B.S., Massachusetts State College, 1931.
 Assistant Extension Specialist in Home Furnishing: Grace B. Gerard, B.S., University of Illinois, 1922.
 Extension Specialist in Agricultural Engineering: Wellesley C. Harrington, M.E., Cornell, 1913.
 Junior Clerk and Stenographer: Ruth F. Koenig.
 Junior Clerk and Stenographer: Mary V. McCarthy.
 Extension Specialist in Farm Management: Roy E. Moser, B.S.Agr., Ohio State University, 1918; M.Sc. Agr., Cornell, 1931.
 Junior Clerk and Stenographer: Mabel Z. Nodine.
 Assistant Extension Specialist in Home Economics: Mary Pozzi.

TABLE II. — SPEAKERS FOR THE YEAR

A. Assembly

1930

Dec. 3. Dr. John H. Finley, Associate Editor, New York Times. Phi Kappa Phi Assembly.

1931

Jan. 14. Dean E. C. Marriner, Colby College, Waterville, Me.
 Feb. 11. Mr. Enrique C. Aguirre of Cuba and Mexico.
 Mar. 4. Dr. Sherwood Eddy, National Y. M. C. A.
 Apr. 15. Mr. William C. White, Journalist.
 May 13. Burnham Declamation Contest.
 Sept. 23. President Roscoe W. Thatcher, M.S.C.
 Oct. 7. Dr. Kenyon L. Butterfield, formerly President M.A.C.
 Nov. 4. Miss Winifred Wygal, National Y. W. C. A.

B. Sunday Chapel

1930

Dec. 7. Rev. Reinhold Niebuhr, Union Theological Seminary, New York City.
 Dec. 14. Rev. Henry Howard, Fifth Avenue Presbyterian Church, New York City.

1931

- Jan. 11. President Albert W. Beaven, Colgate-Rochester Divinity School.
 Jan. 18. Rev. Samuel Macaulay Lindsay, Baptist Church, Brookline, Mass.
 Jan. 25. Dean Charles R. Brown, Divinity School, Yale University.
 Feb. 1. Mr. J. Paul Williams, Director of Religious Education, M.S.C.
 Feb. 8. Professor A. C. Purdy, Hartford Theological Seminary.
 Feb. 15. President Robbins W. Barstow, Hartford Theological Seminary.
 Mar. 1. Dr. Robert E. Speer, Board of Foreign Missions of Presbyterian Church in U. S. A.
 Mar. 8. Rev. Raymond Calkins, First Congregational Church, Cambridge, Mass.
 Mar. 15. Dean Shailer Mathews, Divinity School, Chicago University.
 Apr. 12. President Elliott Speer, Northfield Schools, Northfield, Mass.
 Apr. 19. Dr. Bernard I. Bell, Warden, St. Stephens College, Columbia University.
 Apr. 26. Professor William Lyon Phelps, Yale University.
 Nov. 1. Rev. James Gordon Gilkey, South Congregational Church, Springfield, Mass.
 Nov. 8. Rev. K. C. MacArthur, Massachusetts Federation of Churches.
 Nov. 15. Rev. J. Paul Williams, Director of Religious Education, M. S. C.
 Nov. 22. Rev. Bernard C. Clausen, First Baptist Church, Syracuse, N. Y.

TABLE III. — ATTENDANCE

	REGISTRATION NOV. 1, 1930			REGISTRATION NOV. 1, 1931		
	Men	Women	Total	Men	Women	Total
<i>A. In the Work of College Grade</i>						
Graduate Students	56	9	65	87	21	108
Senior Class	84	30	114	97	30	127
Junior Class	95	30	125	102	30	132
Sophomore Class	122	42	164	144	50	194
Freshman Class	178	61	239	220	84	304
Special Students	3	—	3	2	1	3
Totals	538	172	710	652	216	868
<i>B. Stockbridge School</i>						
Second year	89	4	93	106	7	113
First year	136	11	147	153	5	158
Special Students	—	—	—	2	—	2
Totals	225	15	240	261	12	273
<i>C. Short Course Enrollment</i>						
Winter School	79	4	83	82	4	86
Summer School	65	89	154	84	93	177
Totals	144	93	237	166	97	263

<i>D. Educational Meetings</i>	1930	1931
Adult Leaders in Food Preservation	40	111
American Alumni Council	150	—
Amherst Garden Club	—	50
Annual Extension Service Conference	125	—
Apple Spray Conference	—	1
Boston Market Gardeners' Association at Waltham Field Station	200	—
Camp Gilbert (4-H Club members and leaders)	180	17
Columbia University Foreign Students	—	3
Connecticut Valley Day	350	60
Connecticut Valley Section, American Chemical Society	100	—
Dad's Day	150	—
Eastern College Personnel Officers' Association	69	—
English Folk Dance School	130	12
Extension Home Economics Conference	30	3
Fall Horticultural Exhibition	2,600	1,80

	1930	1931
Farm and Home Week	3,600	4,000
Field Day at Waltham Field Station	900	860
4-H Canning Group	—	32
4-H Canning and Garden Leaders	40	30
4-H Club Agents' Conference	30	30
4-H Garden Club, Waltham Field Station	100	70
4-H Leaders Training School	—	30
4-H Sewing Contest	35	30
Florists School at Waltham Field Station	—	140
Greenkeepers' Exhibition	450	400
Hampden County Poultry Association	50	—
Hampden County Women's Club	174	—
High School Day	923	510
Home Gardeners' School, at Waltham Field Station	—	657
Interscholastic Judging Contests	200	250
Jewish-Christian Relations Group	—	75
Local Unit, F. T. D. A.	50	—
Massachusetts Home Economics Association	—	40
Massachusetts Veterinary Association	40	27
Meat Cutters' School	—	10
Middlesex County 4-H Club Champions	85	110
Mt. Holyoke College Student Group	15	25
New England Plant Pathologists	—	36
Norfolk & Plymouth County Poultrymen	—	70
Northampton Florists' and Gardeners' Club	25	20
Pasture Field Day	95	136
Plymouth County 4-H Group	—	30
Poultry Breeders' Conference	100	100
Poultry Inspectors	35	—
Pullorum Disease Laboratory Workers' Conference	—	34
Rhode Island Holstein-Friesian Club	20	—
Rural Ministers, Waltham Field Station	50	—
Shelburne Falls Garden Club	15	—
Small High School Basketball Tournament	3,500	5,000
Small High School Spring Relays	—	500
Smith College Class	20	—
State Engineers	—	60
State 4-H Dairy Club	150	110
Three County Fruit Meeting	150	120
Tobacco Field Day	100	—
Western Mass. Basketball Coaches' Club	—	60
Women's 4-H Club Agents' Conference	8	—
Total	15,084	16,542

TABLE IV. — STATISTICS OF FRESHMEN ENTERING IN SEPTEMBER, 1931

A. Home Addresses of Students (classified by Towns and Cities)

Abington	2	Florida	1	Pelham	1
Adams	1	Foxborough	1	PITTSFIELD	2
Agawam	7	Frammingham	4	Plymouth	2
Amesbury	1	GARDNER	1	QUINCY	2
Amherst	6	Glastonbury, Conn.	1	Readsboro, Vt.	1
Arlington	5	GLOUCESTER	1	Rehoboth	1
Ashby	1	Greenfield	15	REVERE	5
Ashfield	1	Groveland	2	Richmond	1
Athol	3	Hadley	4	Rochester	2
ATTLEBORO	2	Hampden	1	SALEM	1
Baldwin, N. Y.	1	HAVERHILL	5	Sandwich	1
Barnstable	1	HOLYOKE	6	Sharon	3
Becket	1	Hubbardston	1	Shrewsbury	2
Bedford	1	Huntington	3	Somerset	1
Belchertown	2	Ipswich	2	Southampton	1
Bernardston	1	Kingston	2	South Hadley	1
Billerica	2	LAWRENCE	2	SPRINGFIELD	8
Bloomfield, Conn.	1	Lee	1	Stafford Springs, Conn.	1
BOSTON	14	LEOMINSTER	2	Stanley, Wis.	1
Boxboro	1	Lexington	1	Stoneham	1
Braintree	1	Ludlow	1	Sunderland	1
Brazil, Ind.	1	LYNN	1	SYRACUSE, N. Y.	1
Bridgewater	1	MALDEN	4	TAUNTON	1
Brimfield	1	Maynard	2	Thompsonville, Conn.	1
BRISTOL, Conn.	1	MELROSE	4	Upton	4
Brookline	1	Milford	2	Wakefield	2
CAMBRIDGE	1	Millis	3	Walpole	4
CHELSEA	1	Millville	1	WALTHAM	3
CHICOPEE	4	Monson	1	Ware	4
Clinton	1	Montague	6	Wareham	1
Colrain	1	Needham	1	Watertown	1
Darien, Conn.	1	Nevada City, Calif.	1	Wellfleet	1
Dalton	2	NEW BEDFORD	1	Westborough	1
Dedham	1	NEW BRITAIN, Conn.	1	West Bridgewater	2
Dracut	1	NEWBURYPORT	1	West Brookfield	1
Duxbury	1	NEW LONDON, Conn.	1	WESTFIELD	5
Easthampton	2	NEW ROCHELLE, N. Y.	1	West Newbury	1
East Longmeadow	3	NEWTON	5	West Springfield	3
EAST ORANGE, N. J.	1	NEW YORK, N. Y.	2	Weymouth	4
ENGLEWOOD, N. J.	1	NORTH ADAMS	4	Williamsburg	2
Fairhaven	1	NORTHAMPTON	11	Winchendon	1
FALL RIVER	1	Northfield	4	Winchester	2
Falmouth	1	NORWICH, Conn.	2	WOBURN	1
Fiskeville, R. I.	1	Orange	1	WORCESTER	9
FITCHBURG	1	Palmer	5		

B. Home Addresses (classified by States and Countries)

	Number	Per Cent		Number	Per Cent
California	1	.33	New York	5	1.66
Connecticut	9	2.98	Rhode Island	1	.33
Indiana	1	.33	Vermont	1	.33
Massachusetts	281	93.05	Wisconsin	1	.33
New Jersey	2	.66			
				302	100.00

C. Home Addresses (classified by Counties of Massachusetts)

	Number	Per Cent		Number	Per Cent
Barnstable	4	1.42	Hampshire	37	13.16
Berkshire	13	4.63	Middlesex	43	15.30
Bristol	8	2.85	Norfolk	21	7.47
Essex	17	6.05	Plymouth	13	4.63
Franklin	30	10.68	Suffolk	20	7.12
Hampden	45	16.01	Worcester	30	10.68
				281	100.00

D. Nativity of Parents

	Number	Per Cent
Neither parent foreign born	187	61.92
Both parents foreign born	71	23.51
Father (only) foreign born	23	7.62
Mother (only) foreign born	17	5.63
No statistics	4	1.32
	302	100.00

E. Education of Father

	Number	Per Cent
Common School	134	44.37
High School	81	26.82
Business College	26	8.61
College or University	41	13.58
No statistics	20	6.62
	302	100.00

F. Occupation of Father

	Number	Per Cent
Agriculture and Horticulture	45	14.90
Artisans	79	26.16
Business	88	29.14
Professional	15	4.97
Miscellaneous	37	12.25
Retired	6	1.98
Deceased	24	7.95
No statistics	8	2.65
	302	100.00

G. Intended Vocation of Students

	Men	Women	Total	Per Cent
1. <i>Farming</i> , including Market Gardening, Nursery business, Florist's business, Fruit Growing, Management of Estates, General Farming, Poultry Husbandry, Livestock Breeding, etc.	21	—	21	6.95
2. <i>Agricultural Business</i> , including sales of agricultural products and other capacities such as the fertilizer industry, the feed industry, etc.	2	—	2	.66
3. <i>Science</i> , including Chemistry, Botany, Entomology, Bacteriology, etc., in such capacities as research experts, laboratory assistants, technologists	82	22	104	34.44
4. <i>Landscape Architects</i> , Agricultural Engineers, and Foresters	29	3	32	10.60
5. <i>Teachers</i> , including College Professors, High School Instructors, Specialists in Extension Education, etc.	7	11	18	5.96
6. <i>Professional Practitioners</i> , including Physicians, Surgeons, Dentists, Lawyers, Veterinarians, Ministers, etc.	32	3	35	11.59
7. <i>Civil Engineers</i>	3	—	3	.99
8. <i>Industrial Enterprises</i> , including Manufacturing, Merchandising, Advertising, Banking, Accounting, Real Estate, Insurance, etc.	4	—	4	1.32
9. <i>Authors, Artists, Journalist</i> , etc.	1	4	5	1.66
10. <i>Home Economics</i>	—	22	22	7.29
11. <i>Social Service</i>	7	11	18	5.96
12. <i>Undecided</i>	33	5	38	12.58
	221	81	302	100.00

H. Farm Experience

	Men	Women	Total	Per Cent
Brought up on a farm	32	12	44	14.57
Not brought up on a farm and having no or practically no farm experience	169	61	230	76.16
Not brought up on a farm but having had some farm experience	20	8	28	9.27
	221	81	302	100.00

I. Miscellaneous Statistics

Average age (years)	18.64
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The M. S. C. Bulletin

Volume XXIV

Number 3

Summer School Catalogue

Summer School session for 1932 omitted.



THE M. S. C. BULLETIN

AMHERST, MASSACHUSETTS

VOLUME XXIV

APRIL, 1932

NUMBER 4

PUBLISHED EIGHT TIMES A YEAR BY THE MASSACHUSETTS
STATE COLLEGE: JAN., FEB., MAR., APRIL, MAY, JUNE,
OCT., NOV. ENTERED AT THE POST OFFICE,
AMHERST, MASS., AS SECOND CLASS MATTER

HIGH SCHOOL GUEST DAY NUMBER



MEMORIAL HALL, REGISTRATION HEADQUARTERS

MASSACHUSETTS STATE COLLEGE

THIS ISSUE OF THE BULLETIN CONTAINS INFORMATION CONCERNING HIGH SCHOOL GUEST DAY TO BE HELD AT THE COLLEGE SATURDAY, MAY 7, 1932. THIS IS AN OCCASION WHEN STUDENTS IN THE SECONDARY SCHOOLS OF THE STATE, WHO ARE PREPARING FOR COLLEGE AND ARE INTERESTED IN THE OPPORTUNITIES WHICH THEIR STATE COLLEGE OFFERS, MAY VISIT THE COLLEGE AND LEARN AT FIRST HAND SOMETHING OF ITS FACILITIES AND EDUCATIONAL PROGRAM.

HIGH SCHOOL GUEST DAY



A Student Horse Show at ten o'clock in the morning will be one of the features of High School Day.

An Invitation from the President

I extend a cordial invitation to juniors and seniors in Massachusetts high and other secondary schools to visit their State College on Saturday, May 7. For twenty-three years this College has set aside one day each year when its faculty and students have held "open house" for those young folks in the state who were interested in the opportunities for higher education which are available here.

There was a question this year as to the advisability of continuing this program in view of the fact that enrollment at the College is increasing more rapidly than are facilities for accommodating students. However, we decided that this is an important educational function of the College which should be continued in order that prospective students may know not only what are the opportunities here, but also, what are the limitations.

A program has been arranged which will make it possible for visitors to meet the faculty, see the buildings and equipment, learn of the scope of the course of study and become acquainted with the students and their activities. I hope all who are interested in the educational opportunities which the Commonwealth provides at this College will visit us on May 7. I assure you of a cordial welcome.

ROSCOE W. THATCHER,
President

MASSACHUSETTS STATE COLLEGE

Program

Saturday, May 7, 1932

- 9:00-12:00 A.M. Registration and inspection of the campus.
Exchange your invitation cards for tickets admitting to the events on the program.
Registration desk is at Memorial Hall.
Departments will hold "open house". See following pages for description of things of interest.
- 10:00 A.M. Horse Show—Riding Park—Auspsices of Military Department.
- 11:00-12:00 A.M. Explanation of entrance requirements—Memorial Hall Auditorium.
- 11:30- 1:00 P.M. Dinner may be secured at the college cafeteria at moderate cost.
- 12:00- 1:00 P.M. Concert by College Band—campus near Stockbridge Hall.
- 1:15 P.M. Student Dramatics—Stockbridge Hall—"The Swan", by Franz Molnar.
- 4:00 P.M. Varsity Baseball—State College vs. Wesleyan.

Information

Invitation cards which will admit visitors to the events of the day will gladly be supplied to high school juniors and seniors by members of the State College faculty or student body. They may also be secured from high school principals or their representatives.

Because of the increasingly large numbers of visitors who have attended this program in recent years it has become necessary to restrict admission to the events of the day to high school juniors and seniors who have invitation cards.

The program is planned so that most guests will be able to return to their homes on the same day. Those who live so far away as to make this impractical will be housed by the College. We shall appreciate it if all guests who will need overnight accommodations will write in advance to the Field Secretary.

Visit the Campus Buildings

The greatest opportunity which High School Guest Day affords to those who are interested in continuing their education is that of visiting the college buildings on this campus, meeting members of the faculty and discovering thereby what the educational training is which is offered here. Visitors are urged, therefore, to inspect the various campus buildings and ask questions of those who are in attendance. In many buildings regular classes and laboratory exercises will be in session and in some special exhibits will be on view. Visitors will be cordially welcome in all buildings.

The Physical and Biological Sciences



Students in Entomology study insects to determine their relations to plants and animals and to learn how to control pests.

The Division of Physical and Biological Sciences comprises the Departments of Bacteriology and Physiology; Botany; Chemistry; Entomology, Zoology and Geology; Mathematics; Physics and Veterinary Science. The departments are housed in seven buildings on the campus all of which guests are urged to visit. Members of the faculty will be present in each building to explain the work of the department and in many of them class work and exhibits will make such a visit more interesting.

From nine to ten-thirty o'clock classes in Bacteriology and Physiology will be in session to which visitors will be welcome. The Department of Botany calls attention to the unique collection of plants in the Durfee Plant House and to the synoptical exhibit of plants, the botanical museum and the grotto and aquarium in Clark Hall. Interesting exhibits will be on display in Goessmann Laboratory illustrating some of the work of the Department of Chemistry. There are many interesting things to see in Fernald Hall which houses the Department of Entomology, Zoology and Geology. These include an extensive collection of insects, the zoology museum and the geology museum. The work in beekeeping is also carried on by this department and visitors are invited to visit the Apiary. At the Physics Laboratory there will be typical class room and laboratory demonstrations in electrical, optical and radio subjects.

The Social Sciences

The subject matter taught in this Division is very extensive. It embraces the languages and literatures, English, French, German, and Spanish; economics, general and applied; agricultural economics; sociology; history; music, and education. These subjects deal with man in his thinking and doing on this earth. A knowledge of them is very useful to every man. In the main, therefore, the work of this division is to provide tools and a background for work in other departments. Those students who specialize in these departments find their work in all sorts of occupations, but perhaps the chief outlets into the vocations are into teaching, social work, extension work, government civil service in economics, business forecasting and business.

The departments of this division will have an exhibit of some of their work at Room 114, Stockbridge Hall. Representatives will be there from 9:00—12:00 to consult with students and teachers regarding work in the division and the College.



The Homestead

Home Economics

Every modern girl wishes to prepare herself for a useful vocation. Home economics is distinctly a woman's field where the highest positions are open to her, and where there is a growing variety of opportunity for the college trained woman. This College provides an excellent education in home economics.

The practice house, next to the girls' dormitory, is well worth a visit by any interested in home economics. This is an old colonial house which has recently been renovated and now serves as a very attractive home where girls majoring in home economics put into practice the instruction of the class room.

Agriculture

The Departments of Agricultural Engineering, Agronomy, Animal Husbandry, Dairy Industry, Farm Management and Poultry Husbandry are included in the Division of Agriculture. Classrooms, laboratories and offices are located chiefly in Stockbridge Hall.



Stockbridge Hall—Headquarters of the
Division of Agriculture

Guests are urged to visit Flint Laboratory where are manufactured such dairy products as butter, cheese and ice cream and where the complicated machinery for handling and processing market milk may be inspected. Special exhibits will also be on display. Modern farm machinery and general shop equipment will be on display in the Agricultural Engineering Building, as well as samples of student work. There will be a demonstration in wrought iron working in the forge shop. The livestock at this College compares favorably with that of any State College in the country. A visit to the barns and stables, the judging arena and the meats laboratory should prove interesting. The Department of Agronomy will arrange special exhibits in Stockbridge Hall showing soils, fertilizers, field crops and some of the special work it is doing on the construction and maintenance of golf greens. Those interested in poultry husbandry will find a visit to the poultry plant exceedingly interesting. The incubation and brooding work will be in full swing there.

Military

In accordance with one of the provisions of the Federal Land Grant by which this College was established, a course in military instruction is offered in the form of cavalry drill. The first two years' course is required of all men students and those who elect and satisfactorily complete the four year course are qualified for reserve officers in the United States Army.

Visitors will be interested in the rifle gallery range, the armory and the stables where the horses are quartered. The student horse show at the riding park at ten o'clock will exhibit one of the phases of the military training program on this campus.

MASSACHUSETTS STATE COLLEGE

Horticulture

The Division of Horticulture includes the Departments of Floriculture, Forestry, Horticultural Manufactures, Landscape Architecture, Olericulture and Pomology. These departments are housed chiefly in Wilder Hall and French Hall



Students learning rose culture in one of college greenhouses.

on the East Campus. The new Horticultural Manufactures Laboratory is located near Stockbridge Hall on the West Campus and is well worth a visit. At this laboratory fruits and vegetables are preserved or manufactured into various products and experiments are carried on dealing with food values and food preservation. A special exhibit of the work in forestry will be arranged at French Hall. The Pomology Department will demonstrate spraying and dusting equipment, orchard machinery and refrigeration machinery at Fisher Laboratory and the orchards on the hill. The work of students in floriculture will be illustrated by exhibits at French Hall of flower arrangement and dish gardens. The floricultural greenhouses will also be worth a visit. An exhibition of drawings and other student work in landscape architecture will be on view at Wilder Hall. Laboratory exercises in designing and surveying will also be in progress.

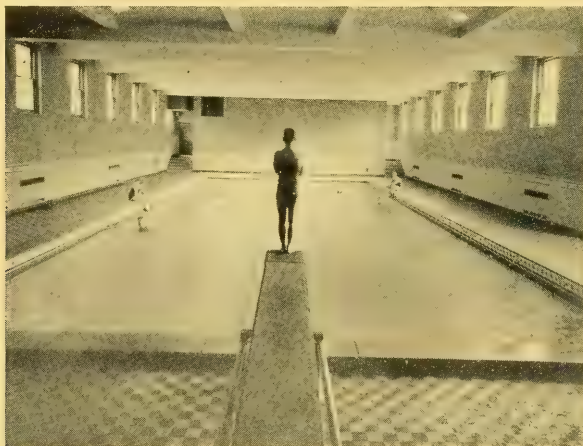
The Stockbridge School of Agriculture

A two-year course in practical agriculture is offered in the Stockbridge School at the Massachusetts State College. This course provides specific vocational training in such fields as animal husbandry, dairy manufactures, flower growing, horticulture, fruit growing, poultry raising and vegetable gardening. The course consists of approximately six months spent in study at the College, then six months of supervised practical training on a farm or in related agricultural business, and, finally, nine months' study and training at the College. Training positions are secured for the student by the Supervisor of Placement. A diploma is awarded upon the satisfactory completion of the course. The graduates of the Stockbridge School have become successful practitioners in the various vocations which they have followed. Information concerning this course may be secured at the Office of the Director on High School Guest Day.

HIGH SCHOOL GUEST DAY

Physical Education

The new Physical Education Building with its swimming pool (pictured below) and its exercise cage, 150 by 180 feet, is well worth a visit. This splendid building provides practically every modern facility for physical education and compares favorably with similar equipment in any New England college.



New Swimming Pool

A program of intercollegiate and intramural athletics provides opportunity for participation of every student in college. More than fifty graduates of the College are engaged as teacher-coaches or coaches alone in secondary schools and colleges and increasing attention is being given to the training of men who wish to follow this vocation.

HIGH SCHOOL GUEST DAY

(For High School Juniors and Seniors)

SATURDAY, MAY 7, 1932

For invitation cards or further information write to:

FIELD SECRETARY
MASSACHUSETTS STATE COLLEGE
AMHERST, MASSACHUSETTS.

THE M. S. C. BULLETIN

AMHERST, MASSACHUSETTS

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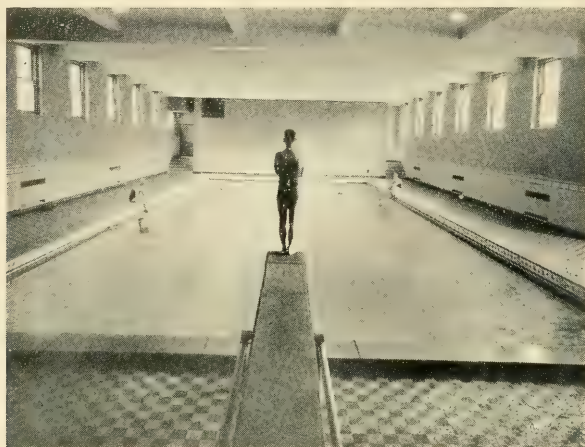
COMMENCEMENT NUMBER



MEMORIAL HALL

MASSACHUSETTS STATE COLLEGE

THIS ISSUE OF THE BULLETIN CONTAINS INFORMATION
CONCERNING THE SIXTY-SECOND COMMENCEMENT TO
BE HELD AT THE COLLEGE JUNE 10 TO 13, 1932



COME TAKE A DIP IN THE NEW POOL

An Executive Invitation

TO STATE COLLEGE ALUMNI:

I am happy to extend to you all a cordial invitation to join with us; faculty, students and trustees; in the celebration of the Sixty-second Commencement at the College, June 10 to 13, 1932. A program has been arranged which, I feel sure, will provide satisfactory opportunities for class and fraternity reunions, for renewal of campus acquaintanceships and for an all-around good time.

This year's fifty-year class is the famous class of '82, the largest class the College enrolled up to that of 1908. I understand that they are making extensive preparations for a "big time" and I am sure all of us will be interested in joining with them and honoring them upon this momentous occasion. Among the other classes which are planning to be back in force this year are '87, '92, '97, '02, '07, '12, '17, '22, '25, '27 and '29. This does not mean that members of other classes are not warmly urged to come. All alumni will be most cordially welcome and I feel safe in assuring all of a very good time.

I cannot refrain from including a personal word in this message. I always look forward to Commencement with keen anticipation of its opportunity to greet many friends among the alumni and to make new acquaintances. Even though I have been compelled to retire from the presidency this year because of my health, I hope to continue as a member of the faculty of the College and as friend of its alumni. Therefore, it will be a very real pleasure for me to greet all of you who can possibly come back to the College for Commencement this June.

ROSCOE W. THATCHER
President.

SIXTY-SECOND COMMENCEMENT

.. Program ..

Friday, June 10, 1932

- 6:00 P. M. Alumni Class Suppers.
8:00 P. M. Flint Oratorical Contest, Memorial Hall.

Saturday, June 11, Alumni Day.

- 10:30 A. M. Annual Meeting Associate Alumni, Memorial Hall.
12:30 P. M. Alumni Luncheon, Physical Education Cage.
1:30 P. M. Speaking Program—Cage.
3:00 P. M. Alumni Parade.
3:30 P. M. Varsity Baseball Game with Amherst, Alumni Field.
6:00 P. M. Fraternity and Class Reunions.
8:30 P. M. Student Dramatics; "Loyalties", by Galsworthy, Bowker Auditorium.



ALUMNI PARADE

Sunday, June 12, Baccalaureate Sunday.

- 9:00 A. M. Academics and Varsity Clubs' Breakfast Meetings, Draper Hall.
12:00 M. Class Reunions.
3:45 P. M. Baccalaureate Service, Bowker Auditorium. Address by
Reverend Herbert Hitchen of the First Unitarian Church of
Newton.
5:00 P. M. President's Reception, Rhododendron Garden.
7:00 P. M. Band Concert on the Campus.

Monday, June 13, Class Day.

- 9:00 A. M. Semi-Annual Meeting of the Board of Trustees.
9:30 A. M. Senior Class Day Exercises on the Campus.
2:30 P. M. Graduation Exercises, Bowker Auditorium,
Address by President Thatcher.
8:00 P. M. Sophomore-Senior Hop, Memorial Hall.

Commencement Reunions

- Alumni Marshal FRANK E. HOOPER '22, Albany, N. Y.
 Speakers, at Alumni Luncheon, Physical Education Building Cage, Saturday
 noon, June 11, 1932:
 1882 (50 yr. class) MR. MORRIS B. KINGMAN, Amherst, Mass..
 1907 (25 yr. class) MR. JOHN N. SUMMERS, Greenfield, Mass..
 1922 (10 yr. class) MR. ALBERT W. SMITH, Springfield, Mass..
 President Roscoe W. Thatcher.

Reunion Classes

Headquarters and Plans

- 1872 Secretary: Daniel P. Cole, 275 Union St., Springfield, Mass. Plans under way for sixtieth reunion.
 1882 Secretary: Morris B. Kingman, 91 So. Pleasant St., Amherst, Mass. Committee in charge of reunion plans: Pres. Charles E. Beach, West Hartford, Conn; Vice-Pres. Samuel C. Damon, Kingston, R. I.; Secretary Kingman. Class supper and meeting tentatively scheduled for Saturday evening, June 11. Headquarters, Paige Laboratory.
 1887 Secretary: Frederick H. Fowler, Shirley, Mass. Committee in charge of reunion plans: Pres. Frank S. Clarke, Hopedale, Mass., and Secretary Fowler. Headquarters, Room 3, Memorial Hall. Plans for class dinner and meeting under way.
 1892 Secretary: H. M. Thomson, Mill Valley, Amherst, Mass. Committee in charge of reunion plans: Pres. E. B. Holland, 28 No. Prospect St., Amherst, Mass. and Secretary. Class dinner and meeting scheduled for Sunday afternoon, June 12. Headquarters, Room 2, Memorial Hall.
 1897 Secretary: Dr. Charles A. Peters, Sunset Place, Amherst, Mass. Plans under way.
 1902 Secretary: Howard Lawton Knight, 1420 Buchanan St., Washington, D. C. Plans under way.
 1907 Secretary: Clinton King, Room 237, 31 Elm St., Springfield, Mass., in charge of arrangements. "An inexpensive but enthusiastic" 25th reunion is planned. Headquarters, Room 4, Memorial Hall.
 1912 Secretary: Frank B. Hills, 90 Broad St., New York City, N. Y., in charge of arrangements. 1912 plans its largest and most interesting reunion this June. Complete plans will be announced later. Headquarters, Senate Room, Memorial Hall.
 1917 Plans for Commencement are being made by a local committee including E. E. Grayson and O. S. Flint, both at the College. Class headquarters in Room 7, Memorial Hall.
 1922 Secretary: Clarence F. Clark, Sunderland, Mass. Committee in charge of reunion plans: Pres. Al. Smith, 3 Hartford Terrace, Springfield, Mass., and Clarence F. Clark. Plans for the class dinner and meeting under way. Headquarters, Alumni Room, Memorial Hall.
 1925 Secretary: George Church, Dept. of Botany, Brown University, Providence R. I. Committee in charge of the informal reunion includes Pres. John Crosby, 10 Davis Ave., Arlington, Mass., Sec. Church and Lewie Keith, 180 Main St., Bridgewater, Mass. Headquarters, loggia, Memorial Hall.
 1927 Secretary: Emerson E. Greenaway, Hartford Public Library, Hartford, Conn., Pres. Ernest G. McVey, 92 Spring St., Windsor Locks, Conn., in charge of reunion plans. Plans under way. Notices will be mailed. Headquarters, Room 8, Memorial Hall.
 1929 Secretary: Betty Lynch, 3442 Main St., Buffalo, N. Y. Banquet Saturday night at Draper Hall.

THE M. S. C. BULLETIN

Amherst, Massachusetts

VOLUME XXIV

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ANNOUNCEMENT

OF THE

STOCKBRIDGE SCHOOL OF AGRICULTURE

For the Sessions of 1932-33

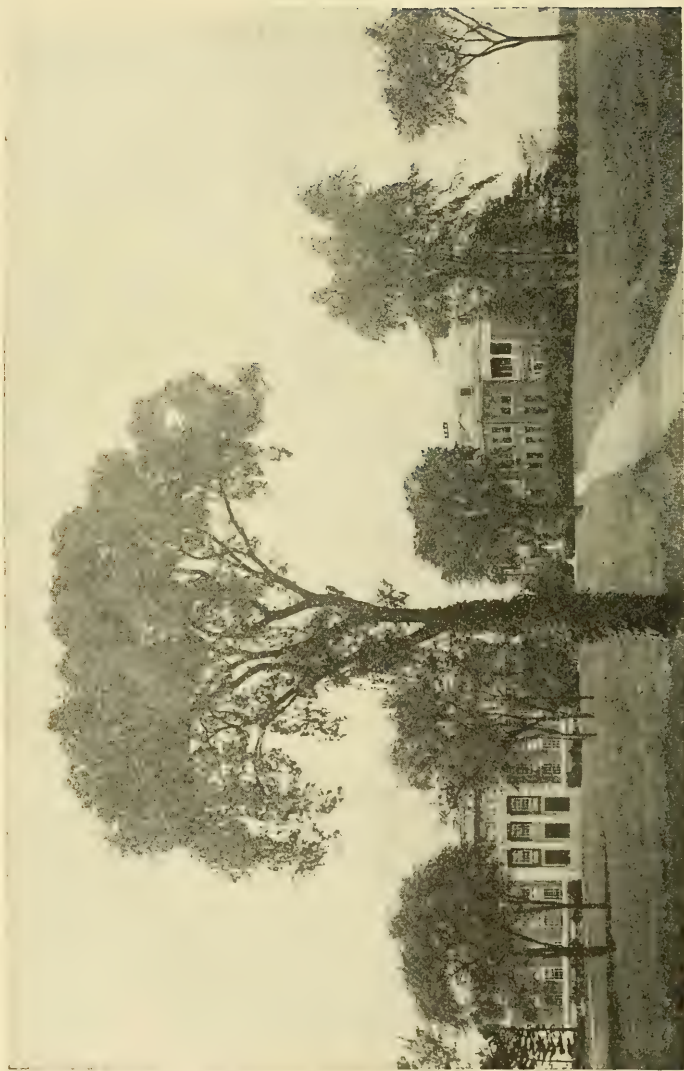


Massachusetts State College



ANNOUNCEMENT
OF
THE STOCKBRIDGE SCHOOL OF AGRICULTURE
AT
Massachusetts State College

This issue of The Bulletin contains information concerning the two year course in practical agriculture at the Massachusetts State College which course is known as The Stockbridge School, named after an early president of the College. Included herein are descriptions of the various courses offered, information concerning expenses, enrollment, regulations, etc. On the last two pages will be found forms for application and certificate of citizenship.



Stockbridge Hall and Dining Hall

CALENDAR, 1932-1933

THE STOCKBRIDGE SCHOOL OF AGRICULTURE

1932

October 3, Monday	Freshman Registration
October 4, Tuesday	Senior Registration
October 5, Wednesday	Fall term begins for Seniors
October 12, Wednesday	Holiday, Columbus Day
November 11, Friday	Holiday, Armistice Day
November 23-28, Wednesday, 12:00 M.-Monday, 8:00 A.M.	Thanksgiving Recess
December 17, Saturday, 6 P.M.	Fall term ends

1933

January 3, Tuesday, 7:30 A.M.	Winter term begins
January 22, Wednesday	Holiday, Washington's Birthday
March 18, Saturday, 6 P. M.	Winter term ends
March 27, Monday, 8:00 A.M.	Spring term begins
April 19, Wednesday	Holiday, Patriots Day
May 30, Tuesday	Holiday, Memorial Day
June 2-5, Friday-Monday	Commencement
October 2, Monday	Freshman Registration
October 3, Tuesday	Senior Registration
October 4, Wednesday	First Semester begins for Seniors
October 12, Thursday	Holiday, Columbus Day
November 11, Saturday	Holiday, Armistice Day
November 22-27, Wednesday 12 M.-Monday, 8:00 A.M.	Thanksgiving Recess
December 20, Wednesday	Christmas Recess Begins

1934

January 2, Tuesday	Christmas Recess Ends
January 3, Saturday	First Semester ends
January 5, Monday	Second Semester begins
January 22, Thursday	Holiday, Washington's Birthday
March 31, Saturday-April 9, Monday	Easter Vacation
April 19, Thursday	Holiday, Patriots Day
May 30, Wednesday	Holiday, Memorial Day
June 1-4, Friday-Monday	Commencement

STAFF

Officers of General College Administration

WILLIAM L. MACHMER, A.M.

Dean of the College

FRED C. KENNEY

Treasurer of the College

President of the College

ROBERT D. HAWLEY, B.S.

Secretary of the College

BASIL B. WOOD, A.B.

Librarian of the College

ROLAND H. VERBECK, B.S.

Director of Short Courses

STOCKBRIDGE ADVISORY COMMITTEE

President,

Director, ROLAND H. VERBECK

Professor RALPH A. VAN METER, Chairman

Professor LYLE L. BLUNDELL

Assistant Professor LUTHER BANTA

Assistant Professor ROLLIN H. BARRETT

Assistant Professor GUY V. GLATFELTER

Assistant Professor S. CHURCH HUBBARD

Assistant Professor MINER J. MARKUSON

Assistant Professor GRANT B. SNYDER

Instructor HARRY G. LINDQUIST

Instructor RANSOM C. PACKARD

Instructor HAROLD W. SMART

Secretary ROBERT D. HAWLEY

The Faculty of Instruction

ORIN E. BALL, B.S.	3 Allen Street
Instructor in Physical Education	
LUTHER BANTA, B.S.	7 Allen Street
Assistant Professor of Poultry Husbandry	
ROLLIN H. BARRETT, M.S.	4 Chestnut Street
Assistant Professor of Farm Management	
LYLE L. BLUNDELL, B.S.	5 Northampton Road
Professor of Horticulture	
RON A. BRADLEY, Ph.D.	Cosby Avenue
Professor of Bacteriology	
WILFRED BRIGGS, M.S.	The Davenport
Assistant Professor of Home Economics	
ALEXANDER E. CANCE, Ph.D.	9 Fearing Street
Professor of Agricultural Economics and Head of Department	
WALTER W. CHENOWETH, A.B., M.S.	North Amherst
Professor of Horticultural Manufactures and Head of Department	
LAWRENCE S. DICKINSON, B.S.	2 Farview Way
Assistant Professor of Agronomy	
RICHARD C. FOLEY, M.S.	Campus
Instructor in Animal Husbandry	
LUIS H. FRANDSEN, B.S. Agri., M.S.	35 Lincoln Avenue
Professor of Dairying and Head of Department	
ARTHUR P. FRENCH, M.S.	North Amherst
Assistant Professor of Pomology	
GUY V. GLATFELTER, M.S.	29 Northampton Road
Assistant Professor of Animal Husbandry	

EMORY E. GRAYSON, B.S.....	37 Cottage Str
<i>Supervisor of Placement Training</i>	
CHRISTIAN I. GUNNESS, B.S.....	105 Butterfield Terr
<i>Professor of Agricultural Engineering and Head of Department</i>	
JAY L. HADDOCK, M.S.....	21 Main Str
<i>Instructor in Agronomy</i>	
MARGARET HAMLIN, B.A.....	12 North East Str
<i>Vocational Counsellor for Women</i>	
CURRY S. HICKS, B.Pd., M.Ed.....	Sunset Aven
<i>Professor of Physical Education and Hygiene and Head of Department</i>	
MRS. CURRY S. HICKS, B.A.....	Sunset Aven
<i>Physical Director for Women</i>	
ROBERT P. HOLDSWORTH, M.F.....	32 Amity Str
<i>Professor of Forestry</i>	
S. CHURCH HUBBARD.....	North Amhe
<i>Assistant Professor of Floriculture</i>	
CLAUDE R. KELLOGG, A.M.....	20 Amity Str
<i>Assistant Professor of Entomology and Beekeeping</i>	
HELEN KNOWLTON, A.M.....	The Homeste
<i>Assistant Professor of Home Economics</i>	
JOHN B. LENTZ, A.B., V.M.D.....	3 Dana Str
<i>Professor of Veterinary Science and Head of Department</i>	
HARRY G. LINDQUIST, M.S.....	17 Fearing Str
<i>Instructor in Dairying</i>	
WAYNE J. LOWRY, M.S.....	53 Lincoln Aven
<i>Instructor in Horticulture</i>	
MINER J. MARKUSON, B.S.....	16 Nutting Aven
<i>Assistant Professor of Agricultural Engineering</i>	
MERRILL J. MACK, M.S.....	32 North Prospect Str
<i>Assistant Professor in Dairying</i>	
JOHN B. NEWLON.....	North Amhe
<i>Instructor in Agricultural Engineering</i>	
RANSOM C. PACKARD, B.S.A.....	North Amhe
<i>Instructor in Bacteriology</i>	
GEORGE F. PUSHEE.....	North Amhe
<i>Instructor in Agricultural Engineering</i>	
ERNEST J. RADCLIFFE, M.D.....	
<i>Professor of Hygiene and Student Health Officer</i>	
CECIL C. RICE, M.S.....	35 Lincoln Aven
<i>Instructor in Horticultural Manufacturers</i>	
VICTOR A. RICE, M.Agrl.....	35 Woodside Aven
<i>Professor of Animal Husbandry and Head of Department, Head of Division of Agriculture</i>	
OLIVER C. ROBERTS, B.S.....	10 Nutting Aven
<i>Instructor in Pomology</i>	
JOSEPH R. ROGERS, JR.....	Pelham Ro
<i>Instructor in Swimming</i>	
DONALD E. ROSS, B.S.....	27 South Prospect Str
<i>Foreman, Department of Floriculture</i>	
WILLIAM C. SANCTUARY, M.S.....	5 Allen Str
<i>Professor of Poultry Husbandry</i>	
FRED C. SEARS, M.S.....	Mount Pleas
<i>Professor of Pomology and Head of Department</i>	
EDNA L. SKINNER, M.A.....	30 Fearing Str
<i>Professor of Home Economics, Head of Department and Adviser of Women</i>	
HAROLD W. SMART, LL.B.....	Butterfield Terr
<i>Instructor in Business Law, Business English and Rural Sociology</i>	
GRANT B. SNYDER, B.S.A.....	North Amhe
<i>Assistant Professor of Vegetable Gardening</i>	
WILLIAM H. TAGUE, B.S.....	25 Cottage Str
<i>Assistant Professor of Agricultural Engineering</i>	
CHARLES H. THAYER.....	South East Str
<i>Instructor in Agronomy</i>	
CLARK L. THAYER, B.S.....	Mount Pleas
<i>Professor of Floriculture and Head of Department</i>	
ALDEN P. TUTTLE, M.S.....	120 Pleasant Str
<i>Instructor in Vegetable Gardening</i>	
RALPH A. VANMETER, M.S.....	North Amhe
<i>Professor of Pomology and Head of Division of Horticulture</i>	
JOHN H. VONDELL.....	24 Fearing Str
<i>Foreman of Poultry Plant and Instructor in Poultry Husbandry</i>	

THE STOCKBRIDGE SCHOOL OF AGRICULTURE

A Two-Year Course in Practical Agriculture

The Stockbridge School of Agriculture, organized in 1918, is a separate and distinct department of the College providing training of a strictly vocational type in the fields of agriculture and horticulture.

Seven programs of study are offered, one of which must be selected by each student and completed as specified to be eligible for the school diploma. The present list of offerings includes:

1. Animal Husbandry	(see page 14)
2. Dairy Manufactures	(" " 17)
3. Poultry Husbandry	(" " 20)
4. Floriculture	(" " 22)
5. General Horticulture	(" " 24)
6. Fruit Growing	(" " 27)
7. Vegetable Gardening	(" " 32)

Since its organization at the request of the Massachusetts Legislature, the school has registered nearly 1,500 students, graduated thirteen classes numbering more than 900 members and enrolled for the last school year (1931-32) 272 young men and women.

The largest number of students comes from Massachusetts, but all the New England States are represented in the student body, as well as New York, Pennsylvania, New Jersey, Illinois, and Michigan.

The value of this kind of concentrated, technical schooling, aiming directly toward preparation for a definite field of work, is amply demonstrated by the useful careers of our graduates.

General Information

Entrance Conditions.—The course is open to any student who is seventeen years of age or over and who has completed at least an elementary school course or its equivalent.

The Stockbridge School of Agriculture is not intended for students already enrolled in high schools. Such students should finish the high school course. Students enrolled in high schools who wish to take the course should bring a statement, either from the principal of the high school or from the parent or guardian, requesting enrollment.

Graduates of county schools of agriculture or of agricultural departments of high schools may complete the course for a diploma in one year, if they are recommended by the Director of the school or the agricultural instructor.

How to Enroll.—Fill out application blank in back of catalog giving all information requested. Be sure to indicate course you wish to elect. Mail this form, with citizenship certificate in back of catalog to Director of Short Courses. If application is accepted you will be notified, and certificate of citizenship will be kept on file until you register. No fees are required until registration. Registration will be held in Memorial Hall on Monday, October 3, for freshmen, and Tuesday, October 4, for seniors. All freshmen students should be on campus from the day of registration until classes open on Thursday to meet required appointments for mental tests, physical examinations, individual photographs for office records, and the class suppers on Monday and Tuesday nights when faculty members discuss the work of their respective departments, and successful alumni address the new students.

Instruction.—The instruction is given by the regular faculty by means of classroom teaching, laboratory exercises and practical work. The work of the classroom is supplemented by demonstration work in the laboratory, dairy room, greenhouse and stables. It is designed to offer plain, practical, direct information, and to establish the underlying reasons as well as the method employed in the various operations. The advantages of the college staff of specialists and the college plant with all its resources are thus made available to young men and women electing this course.

Credit and Diploma. — In order to obtain a diploma a student is expected to have satisfactorily completed all the work called for in the general course which he has selected. A student failing to meet the requirements in his six months' summer training cannot be enrolled for his second year.

Any student against whom bills have been reported to the Director shall have his diploma withheld until such bills have been paid in full.

Scholarship Regulations. — At the close of each term students receive a formal report showing the standings given in the subjects pursued by them.

If a student's term mark in any subject falls below 60 per cent, he is thereby failed (F) in that subject. He shall be debarred from taking the final examination in that subject and must repeat it with the following class.

If the average of the term mark and the final examination is below 60 per cent, the student is thereby conditioned (#).

Student grade shall be recorded at the end of the fifth week of each term and again at the end of the term. The Faculty Committee will consider all questionable grades after each marking period, and instructors will note on grade reports the names of all students whose work is seriously deficient.

When a student's record indicates failures or uniformly poor work, the Faculty Committee may recommend a close supervision of his work by the faculty adviser in his major course, or, if his scholastic grades disqualify him from further work in the school, he may be asked to withdraw.

A student who has deficient scholastic work at the mid-term marking period in February shall not be eligible for placement training until his work meets the required standard.

At the end of any term a student who has a failure in more than one subject or is conditioned in more than two subjects may be dismissed.

RULES AND REGULATIONS

Absences from Class

(1) No unexcused absences will be allowed from classes. (2) All excuses for absence shall be presented by the student in writing, and, if approved by the Director, an excuse card will be granted to be signed by the instructor. Excuse cards must be returned promptly to the office when properly signed. (3) Students presenting excuse cards covering absences are expected to make up all work missed, to the satisfaction of the instructor. (4) Instructors are directed to reduce final grades five points for each unexcused absence occurring on a student's record at the end of any term. (5) No excuses will be accepted at the Short Course office unless presented within two days after the student returns to classes. (6) Two tardinesses unexcused shall count as one absence. (7) Absences from classes immediately before or after a holiday are not allowed except by special permission. (8) The Short Course Office requires all students to report at once, any illness to the college physician, particularly if absence from class is likely to result from the illness. (9) Students failing to observe these rules are placed on probation, and may be asked to withdraw from the course if further violations occur.

Absences from Examinations or Tests

(1) Any student who absents himself from an appointed examination without sufficient cause shall be given zero thereon. In such case he shall not be entitled to a make-up examination unless the Director so requests. A previously announced test may, at the discretion of the instruction, be regarded as a test or as an examination.

(2) Every absence taken before enrollment (the signing of the registration card by the teacher) in a class will be counted.

Student Expenses

Tuition. — A tuition fee of \$20 per term is charged students, residents of Massachusetts, enrolled in the Stockbridge School of Agriculture. Student who are not residents of Massachusetts are charged a tuition fee of \$60 term. The tuition charged persons not citizens of the United States is \$6

a term. Students entering from Massachusetts are required to file a statement signed by either town or city clerk, stating that the applicant's father is a legal resident of Massachusetts. (See form in back of catalog.)

Board. — Students desiring to board at the College Dining Hall (cafeteria service exclusively) should make application at time of registration.

First term payment	\$65.00
Second term payment	69.50
Third term payment	65.00

NOTE. — Full term payment must be made at time of registration.

All students entering the college for the first time in this course are charged a matriculation fee of \$5, which, in event of a student leaving the institution shall be remitted, if all bills due the college are paid, or upon graduation shall be considered as payment for the diploma.

The necessary college expenses are estimated as follows: — Tuition: citizens of Massachusetts, \$20 per term, or \$40 for the first six months of class work (two terms), and \$60 for the second year of nine months (three terms); total tuition charge for the two-year course, \$100. To students out of state tuition is \$60 per term, or \$300 for the two years.

	First Year	Second Year	Total
Matriculation fee	\$5.00		\$5.00
Room in private houses	72.00	\$108.00	180.00
Board at college dining hall, cafeteria plan (Estimated)	150.00	230.00	380.00
Laundry, \$.50 to \$.85 a week	20.00	30.00	50.00
General laboratory fee	8.00	12.00	20.00
Books, stationery, and miscellaneous items	30.00	45.00	75.00
Totals	\$285.00	\$425.00	\$710.00
Mass. Student tuition	40.00	60.00	100.00
Grand Total	\$325.00	\$485.00	\$810.00

At the opening of the college year, before students are registered in their classes, the following charges are payable at the treasurer's office:

Initial Charges

Matriculation fee	\$5.00
Assessment for support of Social Union	1.25
General Laboratory fee	4.00
Student tax for support of athletics, per term*	5.00
Student tax for support of non-athletic activities, per term*	1.50

The six months' placement training between the first and second years enables a student to earn from \$150 to \$300 depending upon his skill and general ability, and the type of work. Of this amount \$100 to \$200 should be saved to apply to the expenses of the second year.

Prospective students should understand that the above estimates cover expenses which may be called strictly college expenses, and that there are other financial obligations voluntarily placed upon students which they should expect to meet. Chief among these are class assessments and taxes levied for maintenance of various organizations, such as the Social Union, Athletic Association, weekly publications, etc. Such expenses vary from \$15 to \$30 a year. Additional financial responsibility is also assumed by students joining clubs or entering into other social activities of the college. Besides the amount necessary for clothes and traveling, the economical student will probably spend between \$300 and \$400 for the first year of two terms only, and \$400 to \$500 for the second year of three terms.

Student Aid

Self Help. — Many students are obliged to find work of some sort to earn their way through college. It is recommended that no new student enter without having at least \$250 and preferably \$350 with which to meet the expenses of the first year. **The college does not encourage students to**

*While this is not essentially a college charge, the Treasurer of the college acts as collector for the student body, and all students are expected to make the payment as indicated. The subscription price of the "Collegian" is fixed by the managers, the amount of athletic tax by vote of the student body.

enter without money in the expectation of earning their way entirely. The student will find it better either to work and accumulate money before coming to college, or to take more than two years in completing his course, or, instead, to borrow money sufficient to carry him through. No student should undertake work that interferes with his studies, and students should understand that, owing to the large number of applications for employment, no one man can receive a large amount of work at the college. A number of students find opportunities for earning money without depending upon the college to furnish them with work. Opportunities for labor for Stockbridge students on the campus are limited to second year men. Students, therefore, may find it rather difficult to obtain work during their first year.

Rooms

Dormitory rooms are available only to four year degree students, and accommodate but a small proportion of them. Private homes in the town furnish the only source of rooms for Stockbridge students.

Rooms are inspected by the student health officer and students are expected to make their own rooming arrangements from a list of approved places available at the Short Course Office.

General Exercises

Assembly exercises are held two mornings each week. A special chapel service on Sunday is held during the fall and winter months. Students are required to attend these general exercises, although the Director is authorized to excuse from Sunday chapel any student who may object to attendance thereon because of his religious scruples. Freshmen must attend during the first term.

STUDENT ACTIVITIES

A large number of student organizations furnish opportunity to students for work and leadership.

The Massachusetts State College Social Union was established about fifteen years ago. All students become members of the Union by paying a small fee, and in the fall and winter months the Union gives a series of entertainments, free to students and faculty. The Memorial Building is the center of student activities. Offices for the various student organizations, including the Stockbridge School Student Council, are maintained in this building. On the first floor are located a lounging room, the Memorial Room, and the offices; in the basement, bowling alleys, pool tables, store, post office, and barber shop; and on the second floor an auditorium for meetings and dances. This building was erected by the alumni, students, faculty, and friends in honor of the fifty-one "Aggie" men who gave their lives in the World War.

The Stockbridge School Council is composed of representatives of the first and second year classes. This body serves as general director of conduct in classes, and represents before the faculty the interests of this group of students.

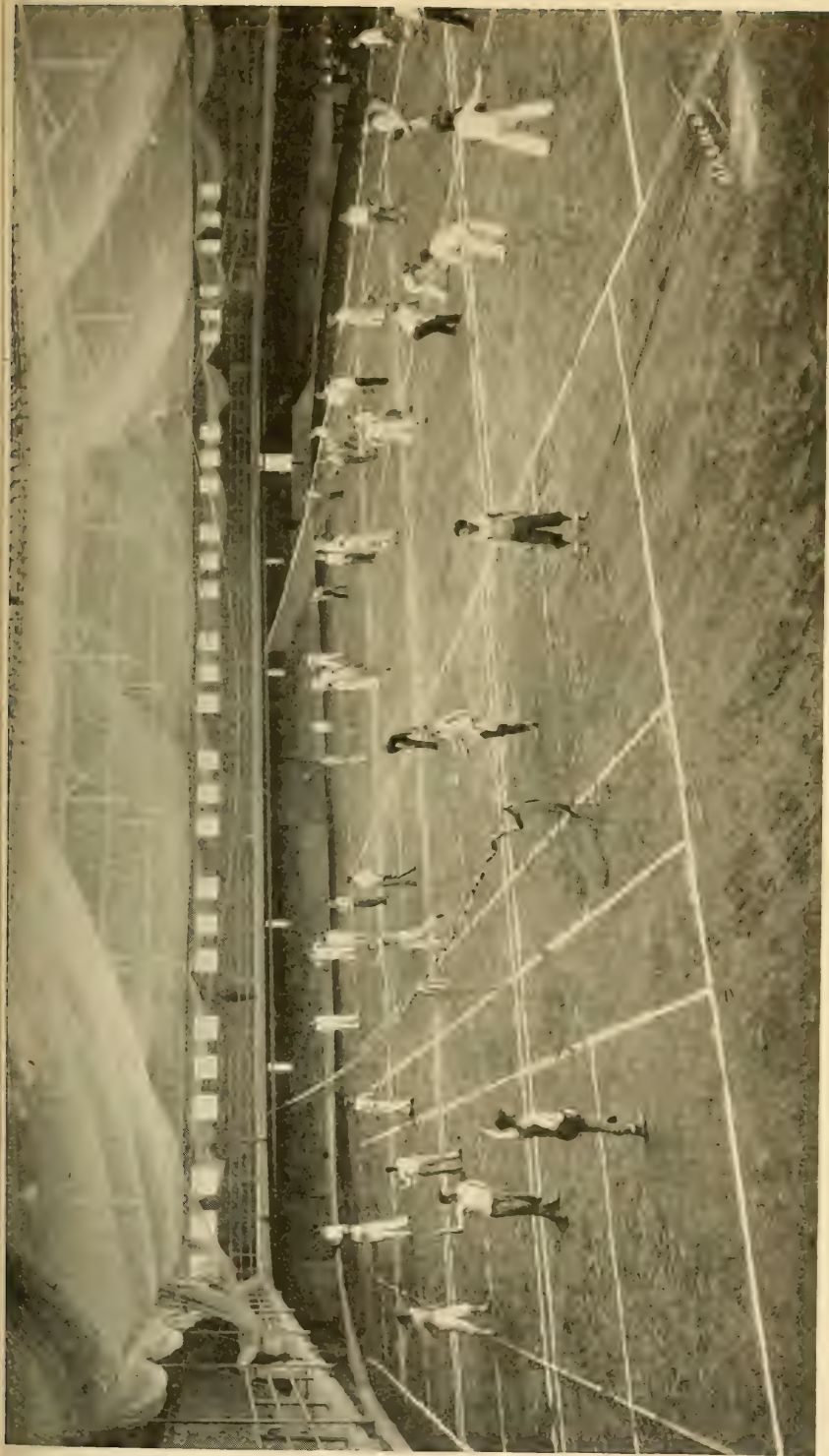
A student year-book called "The Shorthorn" is published annually by the members of the graduating class, and is usually issued in June. All students subscribe to it.

A School Glee Club brings together during the winter months those who are interested in singing, and for those students who play musical instruments there is a School Orchestra.

In the place of fraternities the faculty have authorized social organizations called "clubs" in the Stockbridge School. There are two such organizations in the student body, the A. T. G. Club and the Kolony Klub.

Athletics and Physical Education — The School has its own separate athletic program with regular schedules in football, basketball, ice hockey, cross country and winter track. Sweaters and insignia are awarded to team members and managers in these sports. The official insignia is the letter S.

The football team plays a schedule of 7 games with preparatory school and college freshman teams. The 1931 team obtained victories over Spring-



Physical Education Cage

field College freshmen and Deerfield Academy. The basketball team plays a 10 game schedule, the cross country team usually runs 3 races while 2 or 3 meets are scheduled for the winter track squad. Ice hockey affords 6-8 games depending on the weather.

Due to the fact that freshmen are on placement training during the spring term which leaves only seniors available, no regular team is maintained in baseball. Men desiring to play are organized into teams and an intramural league is run. Numerals may be given for this participation.

This athletic program is entirely under the supervision and direction of the Physical Education Department of the College and coaches are provided for all sports. Lorin E. Ball, director of the Stockbridge Physical Education work is coach of football and basketball; and L. L. Derby, coach of the varsity track team, has charge of the cross country and winter track squads.

All students are urged to participate in some sport each term. No squads are reduced by eliminating the inexperienced players and everyone is given an opportunity to play in games. The football squads for the past two years have consisted of approximately 50 candidates. Games have been scheduled for both the second and third teams so that every man on the squad has participated in an outside scheduled game. Both the first and second teams in basketball have regularly scheduled games.

Every care is exercised to guard against men overtaking their strength in any sport or game to the detriment of their health. No man whose physical condition is at all questionable is allowed to play on the teams. A careful check is maintained by required physical examinations for all students given by the college physician at the opening of the school year. A second examination is made of each man before permission is granted to participate in any sport.

Students also subscribe to the college varsity games and have attendance privileges for varsity sports on the campus.

Class work in physical education for men not on athletic squads is required for both seniors and freshmen during the fall term. This consists of 2 class periods a week. The object of this course is to give the men some knowledge of games which may be of value to them in after school days, as well as to give every man an opportunity to develop sufficient control over his body to enable him to get pleasure from physical activities and to establish correct health habits.

The freshmen receive instruction in soft ball, touch football, soccer, golf, and swimming. Men may elect football, cross country, or tennis instead of the regular class work. The seniors take up volley ball, badminton, archery, and swimming. They may also elect football, cross country, or tennis. The classes are organized into teams which compete against each other with much rivalry. Students are expected to wear old clothes during the play period and shower baths are required at the close of each class period.

A new physical education building containing a swimming pool, a great indoor cage 150 by 180 feet for all kinds of sports and games, and complete locker room and shower bath facilities provide ample equipment to carry out this program. Individual equipment is supplied to all members of the football, hockey, basketball, cross country, and track squads.

STUDENT RELATIONS

The customary high standard of college men in honor, manliness, self-respect, and consideration for the rights of others constitutes the standards of student deportment.

Any student known to be guilty of dishonest conduct or practice must be reported by the instructor to the Director for discipline.

The privileges of the college may be withdrawn from any student at any time if such action is deemed advisable.

It should be understood that the college, acting through its President or any administrative officer designated by him, distinctly reserves the right not only to suspend or dismiss students, but also to name conditions under which students may remain in the institution. For example, if a student is not doing

creditable work he may not only be disciplined, but he may be required to meet certain prescribed conditions in respect to his studies, even though under the foregoing rules his status as a student be not affected. The same provision applies equally to the matter of absences.

Similarly, also, it applies to participation in student activities. Though this will ordinarily be governed by the rules as already laid down, yet if in the judgment of the college authorities a student is neglecting his work on account of these activities, the privilege of participating in them may be withdrawn for such time as is considered necessary. Moreover, it may be withdrawn as punishment for misconduct.

HEALTH SERVICE

The College endeavors to safeguard the health of all students while on the campus, and for this purpose, maintains a physician as Supervisor of Student Health, a resident registered nurse, and a small Infirmary.

1. The Supervisor of Student Health has offices in the new Physical Education Building where he may be consulted during college hours.

2. Infirmary. — Its purpose is to furnish a suitable place for professional attention in case of illness or accident. The out patient clinic is held here daily. The infirmary consists of two small buildings quite inadequate for the needs of the College, but it is hoped that in the near future additional buildings may be erected, and the general equipment amplified.

3. Students are urged to consult the Supervisor of Student Health or the resident nurse at the first sign of physical disorder or for even minor accidents. Many severe illnesses and much lost time can be avoided by early or preventive treatment.

4. The infirmary fee will be at the rate of \$2.00 a day, and will be charged when one or more meals are obtained at the infirmary or when the student remains at the infirmary for one or more nights. A nominal charge may be made to out patients for miscellaneous treatment of a minor character.

5. In addition to the fee charged as specified in paragraph 4, the following additional expenses will be charged to the patient: —

(a) **Nurses.** — In case a special nurse is required for the proper care of an individual the services and board of this nurse will be paid by the patient. Such a nurse will be under the general supervision of the resident nurse.

(b) **Professional Service.** — If a student requires continuous medical attention by a physician, he may be required to select his physician and become responsible for fees charged by that physician.

(c) **Supplies.** — Special medical supplies prescribed by a physician will be charged to the patient.

(d) **Laundry.** — Expense for personal laundry incurred by students while in the infirmary will be charged to the individual student.

THE LIBRARY

The College Library occupies the entire building formerly partly occupied by the chapel. It contains more than 85,000 bound volumes and a very large collection of pamphlets, twice as numerous, which are of great practical value, being monographs on the technical subjects studied in the college. These pamphlets include particularly the publications of the United States Department of Agriculture and those of the State Experiment Stations of other Agricultural colleges in this country and abroad. Among the bound volumes, works on agriculture, horticulture, botany, entomology and the various sciences connected especially with agriculture predominate, but literature, history, economics, religion, sociology and art are also well represented. More than 500 periodicals covering technical and general subjects, and including the best farm papers, are regularly taken and both the current numbers and the back files are readily accessible.

The Library is open for readers from 8 a.m. to 10 p.m. during term time and during part of Sunday. Vacation hours are somewhat shorter.

Stockbridge students will find in the Library helpful material of many sorts in connection with their work, and are cordially invited to make use of this

material. The librarian and library assistants are always on hand, ready and anxious to help.

AGRICULTURAL OPPORTUNITIES FOR WOMEN

Agriculture is a field in which women have always found some opportunity. There are women farming independently, in all branches of agriculture. As a rule poultry raising, small fruits and vegetable growing and floriculture seem to offer women an easier opportunity than dairy, stock and general farming. Women are also finding some paid positions which include farm and estate workers and managers, garden service workers and agricultural officers in state correctional institutions.

For the woman or girl whose home is already upon the farm the opportunity is exceptionally good. With the help of an agricultural education there are open to her many means of increasing her own or the farm income. With the knowledge of farm life which she already possesses, and with the possibility of securing occasional help from her family, she can easily carry on and develop a profitable enterprise of her own. The Stockbridge School of Agriculture will afford to the women who wish to engage in farming the practical training which they will need to fit them for their work, and will open to them new doors of opportunity. The particular problems which women engaged in farming will have to meet, and the special lines of farming in which they will have favorable opportunities, will be considered in a series of conferences.

Women who are interested in taking agricultural courses should correspond with Miss Margaret Hamlin, who acts as vocational counselor for women.

POSITIONS

The College does not guarantee positions to students registered in any of its courses, but it has an opportunity to recommend students for a large number of positions. A record is kept of each student's work and experience, and of his success in positions for which he has been recommended after he has finished his course. Opportunities for trained men and women, especially those who have had farm experience, are good.

A student desiring a recommendation from the college must meet the following conditions:—

- (1) He must be of good character.
- (2) His previous record must be good.
- (3) His work in all courses must be satisfactory.

Students who have not previously had a considerable amount of practical experience cannot, as a rule, be recommended for positions of responsibility. This is especially true of the better positions for which managers or superintendents are wanted.

VOCATIONAL PLACEMENT

The work of locating students for apprentice training is in charge of the supervisor of placement training. Every effort is made to secure satisfactory positions affording the kind of training desired by the student, but the School cannot guarantee to place every student for training when positions are not available. In normal times placement positions are secured for all students who are eligible.

1. Positions are secured that will enable a student to gain practical experience in his particular vocation.

2. A student desiring placement at home may arrange for such assignment if the supervisor approves. As a rule, it will be found better for a student to spend this six months away from home even though he plans to be employed there after finishing the course. This statement is based on the experience of students who have already taken the course.

If credit is to be secured for the six months' placement training the following conditions must be carefully observed:

1. The student must interview the supervisor early in his first year in order that his qualifications, the type of work he wishes to pursue, and his general fitness may be determined.

2. No final arrangement for placement training may be made by the student himself until the supervisor has been consulted.

3. Students are required to complete their period of training without unnecessary absences.

4. No transfers are to be made by a student, if he is to receive credit, until permission has been had from the supervisor.

5. A position may not be given up by the student until the supervisor has been notified.

6. A monthly report must be furnished on the form supplied, and submitted not later than the fifth of each month during his training period.

7. A student whose grade of work is regularly poor (below a 70 rating) in the classes of his major subject will not be eligible for placement training, unless recommended by the department in charge of his major work.

8. When a student fails to complete the requirements of his placement training with a satisfactory grade, he is not allowed to take the work of the second year.

9. All male students are given a thorough physical examination by the department of Physical Education at the beginning of the college term. Any disabilities liable to affect the student's placement work are noted, and, if of a serious nature, recommendations for corrective measures are supplied. Parents should understand that most kinds of agricultural work require a well-balanced combination of brawn and brain. No student whose physical condition is questionable will be accepted for placement training without a physician's certificate, and parents' approval.

It should be clearly understood by both employer and employee that the same energy, regularity and general conduct will be expected of the student during his period of placement training as is expected in his work in classes and on the campus.

It should also be noted that this six months' experience is educational in its nature. Students are expected to earn and receive a reasonable wage, but the purpose of the training is the experience gained rather than the wage earned. The scale of wages may vary in different localities, but each man's ability is given very careful thought, that he may obtain a wage that is fair to him. In the event of any misunderstanding the supervisor should be immediately informed.

DESCRIPTION OF COURSES

ANIMAL HUSBANDRY

The Animal Husbandry major fits students to cope with the practical problems of live stock production and management. It supplements and supports but does not duplicate or replace the necessary experience gained only through actual manual work in caring for animals. As a foundation, the study of breed history, live stock trends, animal anatomy and physiology is required. Special attention is given to physiological processes in breeding and feeding. Later courses show how these processes actually function under the stockman's guidance.

A herd of about 200 dairy cattle including Ayrshires, Guernseys, Jerseys, Holsteins and Milking Shorthorns, a band of about a dozen Percheron brood mares, a flock of about 60 Southdown and Shropshire sheep and a herd of about 50 Berkshire and Chester White swine, together with modern barns and equipment for housing and caring for the above live stock, and a farm of several hundred acres used primarily for the production of feed crops, gives ample scope for illustrating and giving practice in modern methods of live stock handling. The farm and barns are our laboratory; the animals and accessories our equipment.

Graduates from the Animal Husbandry major for the most part secure positions as herdsmen or farm managers.

Animal Husbandry

First Year

Fall Term

Agricultural Opportunities S-1
(Required of women students)
Animal Husbandry S-1
(Types and Breeds)
Bacteriology S-1 (Bacteriology
and Rural Hygiene)
Business Law S-1
Dairy S-1 (General Dairy)
Poultry Husbandry S-5 (General
course in Poultry Husbandry)
Soils and Crops S-1 (Soil Manage-
ment)
*Physical Education S-1
Physical Education S-3 (Hygiene
— required of men students)
Tractor Practice

Electives

English S-1 (Required of students
having less than two years of
High School)
Home Economics S-5 (Home Fur-
nishing)

*Physical Education S-1 is re-
quired of men students not
participating in football; also
required of women students.

Winter Term

Agricultural Engineering S-2
(Motors)
Animal Husbandry S-2 (Prin-
ciples of Feeding)
Bacteriology S-2 (Continuation
of Bacteriology S-1)
Fruit Growing S-10 (General
course in Fruit Growing)
Soils and Crops S-2 (Fertilizers)
Physical Education S-2 (Re-
quired of women students)
Milking, Harnessing and Team-
ing

Electives

Home Economics S-3 (Problems
in Personal and Home Living)
Physical Education S-4 (Basket-
ball and Hockey)

Spring Term

Six months' placement training

Second Year

Fall Term

Agricultural Economics S-1
(Farm Economic Problems)
Agricultural Engineering S-1
(Farm Engineering)
Agricultural Engineering S-3
(Carpentry)
Animal Husbandry S-3 (Feeding
Practice in Live Stock other
than Dairy Cattle)
Farm Management S-1 (Farm
Management and Accounts)
Physical Education S-2 (Re-
quired of men students not
participating in football)

Electives

Forestry S-1 (The Management
of Woodlands)
Physical Education S-3 (For
women)

Winter Term

Agricultural Economics S-2
(Marketing)
Farm Management S-2 (Con-
tinuation of Farm Manage-
ment S-1)
Rural Sociology S-1 (Social and
Economic Problems)
Animal Husbandry S-4 (Animal
Breeding and Herd Book
Study)
Animal Husbandry S-5 (Live-
stock Production and Advanced
Judging)

Electives

Animal Husbandry S-7 (Farm
Meats)
Physical Education S-4

Spring Term

Rural Sociology S-2 (Continua-
tion of Rural Sociology S-1)
Soils and Crops S-3 (Field Crops)
Agricultural Engineering S-7
(Farm Structures)
Veterinary Science S-1 (Animal
Sanitary Science)

Electives

English, S-3
Physical Education S-5 (Baseball)

Animal Husbandry S-1. (Types and Breeds.) I.

Includes a study of the history and development of the various breeds of cattle, horses, sheep and swine together with a discussion of the conditions to which each breed seems best adapted. Laboratory work consists of judging and evaluating as many rings of all the classes of farm live stock as time will permit. Textbook: Plumb, "Types and Breeds of Farm Animals."
3 class hours and 2 2-hour laboratory periods a week. Credits, 5.

Animal Husbandry S-2. (Principles of Feeding.) II.

A study of the fundamental principles of animal nutrition, of the composition of feeding materials and their relative importance for the different classes of farm animals in New England. The latter part of the course is devoted to a study of feeding standards and to the calculation of rations for all classes of farm live stock. Textbook: Henry and Morrison, "Feeds and Feeding."
5 class hours a week Credits, 5.

Animal Husbandry S-3. (Feeding Practice in Live Stock other than Dairy Cattle.) I.

A continuation of S-2 showing the application of the principles of nutrition in economic live stock production and including the management and feeding of horses, beef cattle, sheep and swine. Feeding and managerial problems are assigned for outside work followed by ample classroom discussions. Prerequisites Animal Husbandry S-1 and Animal Husbandry S-2. Textbook: Henry and Morrison, "Feeds and Feeding."
5 class hours a week. Credits, 5.

Animal Husbandry S-4. (Animal Breeding and Herd-Book Study.) II.

Includes a study of the physiology of reproduction and of animal genetics as well as the art of breeding. Among the topics included are the Origin and Domestication of Farm Animals; Modern Theories of Heredity, Variation and Sex Determination; the Systems of Breeding — Cross-, Out-, Line-, and Close-Breeding; and the one paramount problem of animal breeding, namely, Selection. Considerable pedigree work in the student's favorite breed is also included. Prerequisites: Animal Husbandry S-1 and Animal Husbandry S-2. Textbook: Rice, "Breeding and Improvement of Farm Animals."
4 class hours and 1 2-hour laboratory period a week. Credits, 5.

Animal Husbandry S-5. (Livestock Production and Advanced Judging.) II.

Consideration will be given to matters pertaining to the feeding, fitting for show, and showing, judging and management of dairy cattle particularly, although students may elect to concentrate on other classes of livestock.

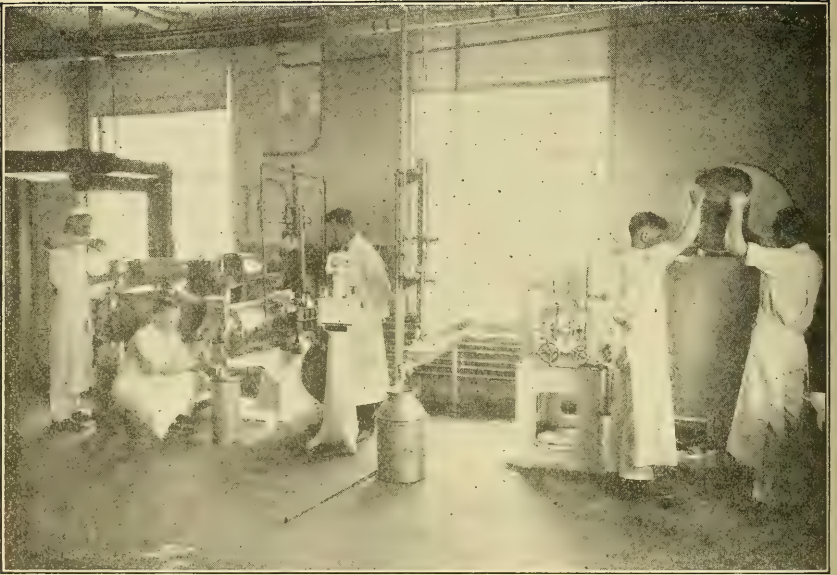
There will be talks by specialists, and laboratory work in judging and fitting for show and showing.

Trips will also be taken to purebred livestock farms for the purpose of inspection, and to judge classes of livestock. Saturdays will be reserved for these trips, and it will be required for the student to make at least five trips. The total cost for transportation covering these trips will be approximately \$10.00.

Prerequisites: Animal Husbandry S-1, Animal Husbandry S-2, Animal Husbandry S-3, Animal Husbandry S-4.
5 2-hour laboratory periods a week. Credits, 5.

Animal Husbandry S-7. (Farm Meats.) II.

This course is the complement of the production course previously given and permits the student to follow the product (beef, pork, veal and lamb) through the farm barn and feed lot to its final destination, the consumer's table. Practice is afforded in the killing, cutting and curing of beef, pork, veal and lamb. Included in this course is a trip to several large packing houses in Boston, consuming two days and costing about \$20. Prerequisites: Animal Husbandry S-1, Animal Husbandry S-2, Animal Husbandry S-3. Textbook: Tomhave, "Meat and Meat Products."
1 class hour and 1 4-hour laboratory period a week. Credits, 3.



Ice Cream Making



College Guernseys. Farm buildings in background serve as laboratories for Animal Husbandry

NOTE:— Every student in this course must qualify in tractor practice, milking, harnessing, and teaming, single and double. Arrangements for practice periods and examinations by special assignment. No student will be put in placement training who has not satisfied these preliminary requirements.

DAIRY MANUFACTURES

The Dairy Manufactures course is designed to fit men for positions with market milk concerns, creameries, ice-cream factories, and specialized dairy farms.

All dairy manufacturing work is given in the dairy building (Flint Laboratory), a modern building designed especially for dairy work. The building is equipped with the newest and best types of dairy and creamery machinery.

The market milk room contains two complete pasteurizing units, a clarifier, separator, milk heater, automatic bottle filler and capper, and other necessary equipment for the proper handling of market milk.

The ice-cream making room contains a brine freezer, a direct expansion freezer and additional equipment such as is found in a modern ice-cream plant.

The room designed for cheese making is equipped with cheese vats, draining racks, presses, mixer, etc. The butter making room has various types of hand and power churns, workers, scales, and other accessories.

The separator room contains a complete collection of separators and exhibits of modern equipment and supplies for the dairyman.

The testing laboratories are well equipped with apparatus for the Babcock and Mojonnier tests.

Dairy Manufactures

First Year

Fall Term

Agricultural Opportunities S-1
(Required of women students)
Animal Husbandry S-1
(Types and Breeds)
Bacteriology S-1 (Bacteriology
and Rural Hygiene)
Business Law S-1
Dairy S-1 (General Dairy)
Soils and Crops S-1 (Soil Manage-
ment)
*Physical Education S-1
Physical Education S-3 (Hygiene
— required of men students)

Electives

English S-1 (Required of students
having less than two years of
High School)
Home Economics S-5 (Home Fur-
nishing)

*Physical Education S-1 is re-
quired of men students not
participating in football; also
required of women students

Winter Term

Agricultural Engineering S-2
(Motors)
Animal Husbandry S-2 (Prin-
ciples of Feeding)
Bacteriology S-2 (Continuation
of Bacteriology S-1)
Dairy S-2 (Testing Milk Prod-
ucts)
Horticultural Manufactures S-5
Soils and Crops S-2 (Fertilizers)
Physical Education S-2 (Re-
quired of women students)

Electives

Home Economics S-3 (Problems
in Personal and Home Living)
Physical Education S-4 (Basket-
ball and Hockey)

Spring Term

Six months' placement training

Second Year

Fall Term

Agricultural Economics S-1
(Farm Economic Problems)
Bacteriology S-3 (Dairy Bac-
teriology)
Dairy S-3 (Ice Cream Making)
Farm Management S-1 (Farm
Management and Accounts)
Physical Education S-2 (Re-
quired of men students not
participating in football)

Electives

Physical Education S-3 (For
women)

Winter Term

Agricultural Economics S-2
(Marketing)
Dairy S-4 (Market Milk)
Farm Management S-2 (Contin-
uation of Farm Management
S-1)
Rural Sociology S-1 (Social and
Economic Problems)

Electives

Physical Education S-4

Spring Term

Agricultural Engineering S-5
(Dairy Mechanics)
Dairy S-5 (Butter making and
other products)
Rural Sociology S-2 (Continua-
tion of Rural Sociology S-1)
Veterinary Science S-1 (Animal
Sanitary Science)

Electives

English S-3
Physical Education S-5 (Baseball)

Dairy S-1. (General Dairy.) I.

This course takes up the question of the importance of dairying in the United States, and especially in the New England States, giving the develop-

ment of dairying from the earliest to the present time. It covers the secretion, composition, and properties of milk; reasons for variation in the per cent of fat in different samples of milk; the Babcock test for fat in milk and other dairy products; other common milk tests; the advantage of testing herds, cow test associations, advanced registry work; the handling of market milk; soft cheese making, ice-cream making, and butter making as applied to general farm conditions. The laboratory work consists mainly in testing milk and dairy products for butter fat, solids, and acidity, together with some laboratory work in milk handling, butter making, cheese making, and ice-cream making.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Dairy S-2. (Testing Milk Products.) II.

In this course a study is made of the common tests used in dairy manufacturing processes.

The lecture work of this course includes a discussion of the application of tests, what they indicate and their importance in the dairy plant.

The laboratory work consists of a study of the various dairy laboratory tests such as sediment, flavor, and total solids of milk; moisture fat and salt determination in butter; moisture test of cheese; the operation of the Mojonnier tester and the modified Babcock tests for fat in ice-cream.

1 class hour and 1 2-hour laboratory period a week.

Credits, 2.

Dairy S-3. (Ice-Cream Making.) I.

In this course a careful study is made of modern methods of manufacturing the common frozen dairy products (ice-cream, sherbets, and ices, also frozen puddings, punches, mousses, etc.)

The lecture work includes a discussion of the history of ice-cream making, the ingredients found in ice-cream, methods of preparing and standardizing mixes, the freezing process, methods of hardening, marketing, and distribution of the finished product.

The laboratory work involves the preparation and standardization of ice-cream mixes, the freezing of ice-cream and other frozen dairy products, and laboratory tests for butter fat and total solids in ice-cream.

3 class hours and 3 3-hour laboratory periods a week.

Credits, 8.

Dairy S-4. (Market Milk.) II.

This course takes up the history of market milk, its food value and use. Attention is given to the necessary essentials in producing a clean product; the economics of milk production; the advantages of co-operative milk producers' organization; the various methods of marketing milk; clarification; pasteurization; cooling, etc.

The laboratory work consists of receiving and making quality tests on milk and the operation of the machinery used in processing market milk. In addition, trips to dairy farms and a one-day trip, with estimated cost of \$5.00, will be made to city milk plants.

3 class hours and 3 3-hour laboratory periods a week.

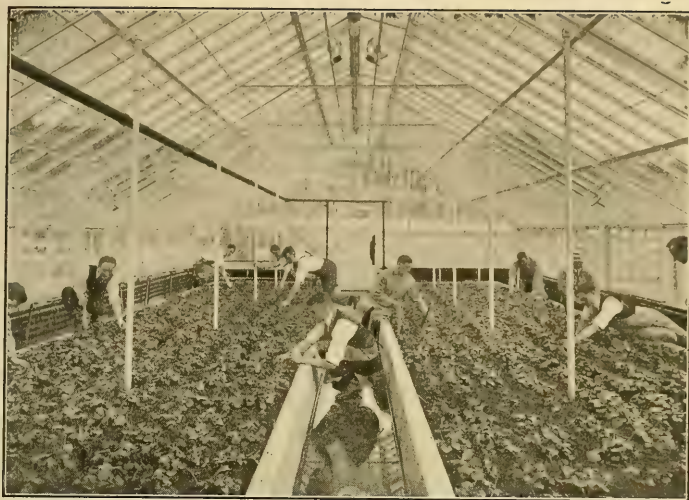
Credits, 8.

Dairy S-5. (Butter Making and Other Dairy Products.) III.

A large part of this course consists of the study of butter making; other products are cheese and "surplus products."

Under butter making the principal factors studied are: methods of separating milk, the history, selection, care, and use of separators; the pasteurization and ripening of cream; testing cream for acidity; the making and use of starters; a study of churns and churning; modern methods of making butter; marketing butter; tests for moisture, salt, fat, and curd content of butter.

Lectures are given covering the manufacture of other milk products (cheese, commercial buttermilk, casein, condensed milk, milk powder, etc.) The manufacture of hard and soft cheeses (cheddar, pimento, olive, nut, neuf-chatel, cottage, etc.) is considered, either from the standpoint of marketing the entire milk supply of the dairy through these products or the economic disposal of surplus milk.



Greenhouse Work



Field Study of Tillage Implements

The laboratory work covers the operation of separators and churns, the making of butter, hard and soft cheese, commercial buttermilk, etc. In addition, a one-day trip, with estimated cost of \$5.00 will be made to city dairy plants.

4 class hours and 3 3-hour laboratory periods a week.

Credits, 9.

POULTRY HUSBANDRY

Seven courses are offered by this department. One is a general course designed particularly to equip the student with fundamental principles underlying successful poultry raising as related especially to the farm flock. The other six courses are for the student who desires to specialize in poultry culture.

There is a broad field of opportunity for adequately trained men in the commercial handling and sale of poultry and poultry products, specialists in incubation, brooding and rearing, and assistants or managers of commercial poultry farms. Good profits and wages await well-equipped men and women in these and other branches of poultry work.

This department is well-equipped to offer practical instruction in poultry husbandry. Our quarters and equipment in Stockbridge Hall provide ample facilities for efficient classroom and laboratory teaching.

Our practical laboratory (college poultry plant) comprises about 1,500 adult birds, divided into some 40 pens of various designs, the flocks ranging in size from 10 to 250 birds; thirty lamp incubators, as well as four mammoth machines; brooding and rearing facilities for 5,000 chicks, including many styles of coal and electric brooders and batteries; facilities for practice in feeding, fattening, killing, picking, caponizing, judging, mixing rations construction of poultry houses and appliances, etc.

In addition to the actual practice work performed, the student has an opportunity to keep under observation practical experiments and demonstrations continually under way for the instruction of students and practical poultry keepers.

Poultry Husbandry

First Year

Fall Term

Agricultural Opportunities S-1
(Required of women students)
Business Law S-1
Dairy S-1 (General Dairy)
Poultry Husbandry S-1
(Judging and Housing)
Soils and Crops S-1 (Soil Management)
*Physical Education S-1
Physical Education S-3 (Hygiene
— required of men students)
Tractor Practice

Electives

English S-1 (Required of students
having less than two years of
High School)
Home Economics S-5 (Home
Furnishing)
*Physical Education S-1 is re-
quired of men students not
participating in football; also
required of women students

Winter Term

Agricultural Engineering S-2
(Motors)
Bacteriology S-1 (Bacteriology
and Rural Hygiene)
Bacteriology S-2 (Continuation
of Bacteriology S-1)
Poultry Husbandry S-2 (Incubating and Brooding)
Fruit Growing S-10 (General
Course in Fruit Growing)
Physical Education S-2 (Re-
quired of women students)
Milking, Harnessing and Team-
ing

Electives

Home Economics S-3 (Problems
in Personal and Home Living)
Soils and Crops S-2 (Fertilizers)
Physical Education S-4 (Basket-
ball and Hockey)

Spring Term

Six months' placement training

21
Second Year

Fall Term

Agricultural Economics S-1
(Farm Economic Problems)
Agricultural Engineering S-3
(Carpentry)
Animal Husbandry S-1
(Types and Breeds)
Poultry Husbandry S-3 (Feeding and Marketing)
Poultry Husbandry S-7
(Physiology, Sanitation and Disease Control)
Physical Education S-2 (Required of men students not participating in football)

Electives

Physical Education S-3 (For women)
Forestry S-1 (The Management of Woodlands)

Winter Term

Agricultural Economics S-2
(Marketing)
Agricultural Engineering S-4 (Repair of Farm Equipment)
Farm Management S-1 (Farm Management and Accounts)
Poultry Husbandry S-4 (Breeding)
Rural Sociology S-1 (Social and Economic Problems)
Vegetable Gardening S-6 (Principles of Vegetable Growing)

Electives

Physical Education S-4

Spring Term

Agricultural Engineering S-7
(Farm Structures)
Farm Management S-2 (Continuation of Farm Management S-1)
Poultry Husbandry S-5 (Managing the Poultry Farm)
Rural Sociology S-2 (Continuation of Rural Sociology S-1)
Soils and Crops S-3 (Field Crops)
or
Veterinary Science S-1 (Animal Sanitary Science)

Electives

English S-3
Physical Education S-5 (Baseball)

Poultry Husbandry S-1. (Judging and Housing.) I.

This course embraces a study of the various economically important types and breeds of domestic fowl, judging for egg production capacity, and for exhibition quality. A visit to Storrs egg laying contest is required. This course also covers the principles and practices of constructing and equipping houses on a commercial poultry farm. Three hours for judging; three hours for housing.

4 class hours and 2 2-hour laboratory periods a week.

Credits, 6.

Poultry Husbandry S-2. (Incubating and Brooding.) II.

A study of incubation and brooding is made by means of the operation of standard incubators and brooders and through a consideration of basic principles. Students select and grade hatching eggs; complete a hatch in small incubators and run mammoth incubators for a period of time. Under supervision each student has charge of a brood of chicks.

2 class hours and the equivalent of 3 2-hour laboratory periods a week.

Credits, 5.

Poultry Husbandry S-3. (Feeding and Marketing.) I.

A study of the common poultry feeds, feeding principles and successful commercial farm practices. This course also covers candling and grading eggs, market classification of poultry and eggs, judging eggs, fattening, killing, picking, drawing, and judging of live and dressed market poultry. Three hours for feeding; marketing three hours.

4 class hours and 2 2-hour laboratory periods a week.

Credits, 6.

Poultry Husbandry S-4. (Breeding.) II.

This course includes the study of the improvement of poultry by means of mass selection, "seed-plot" and pedigree methods of breeding. Students follow through each step of a pedigree hatch and assist in the selection of the breeders used at the college plant. Basic principles of heredity necessary for an understanding of good breeding practices are studied. A visit to Genetics Laboratory at Storrs, Connecticut, is required in the fall term.

4 class hours and 1 2-hour laboratory period a week.

Credits, 5.

Poultry Husbandry S-5. (Managing the Poultry Farm.) III.

In this course the following points are given special attention: lines upon which a well-organized poultry farm is developed, the general arrangement of plots and buildings, record keeping, accounting and advertising, and a study of surveys. A trip covering three or more days will be made to representative successful poultry farms. The expense per student is approximately \$15-\$20. This is required of each student taking the course for credit. One hour's credit will be devoted to the specialties, such as turkeys, ducks, etc.

5 class hours and the equivalent of 1 2-hour laboratory period a week.

Credits, 6.

Poultry Husbandry S-6. (General Poultry Husbandry.) I.

Poultry keeping as a national industry; its importance and geographical distribution; opportunities and possibilities in poultry culture in Massachusetts; principles of feeding; utility classification of fowl; incubation; the production of hatching eggs; the baby chick industry; and brooding and rearing. Practical exercises will be closely correlated with the study of breeds and varieties, various types and sizes of incubators, brooders, and brooder houses. "Practical Poultry Management" by Rice and Botsford will be used as a text.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

NOTE. — Students who take course 6 must get permission from the Poultry Department to take advanced poultry courses.

Poultry Husbandry S-7. (Physiology, Sanitation and Disease Control.) I.

This course aims to acquaint the student with the normal hygienic conditions under which our domestic poultry thrive best. Sufficient anatomy and physiology will be given to enable the student to distinguish between normal and abnormal conditions. The nature of disinfectants and external and internal antiseptics will be stressed and the students made acquainted with the best usages both scientific and practical in conducting a sanitary program for disease prevention and control. A special effort will be made to link the sanitary, hygienic, and disease control problems with the so-called down-to-date practices in feeding, housing and general management.

2 class hours and 1 2-hour laboratory period a week.

Credits, 3.

Weekly Group Conference. This conference is designed to meet the needs of students wishing to pursue certain subjects beyond course limits or to survey phases of the industry not covered by the required courses. Enrollment voluntary. No credit. Available spring term only.

NOTE. — Every student in this course must qualify in tractor practice, milking, harnessing, and teaming, single and double. Arrangements for practice periods and examinations by special assignment. No student will be put in placement training who has not satisfied these preliminary requirements.

FLORICULTURE

Students who complete the course in Floriculture are fitted primarily for work in commercial and private estate greenhouse establishments and retail flower stores. After gaining experience such students may be able to start in business for themselves. With the courses in general horticulture they should also be qualified for positions on private estates, in parks, or in nurseries.

The offices and class rooms of the Department of Floriculture are located in French Hall. Of the two lecture rooms, one will accommodate 40 students, the other 90 students; a laboratory, equipped with slate-covered tables, will accommodate 40 students. In the basement of the building the department has a specially prepared room for bulb storage, a fertilizer and tool room, and a large room for general storage purposes.

The glass area of the department consists of approximately 20,000 square feet, divided as follows: French Hall, range of 7,200 square feet, a durable, practical commercial range, composed of palm and fern, sweet pea, carnation, rose and students' houses; the old Durfee range of 7,400 square feet, devoted to the growing of decorative, conservatory and bedding plants and chrysanthemums; one house of 3,200 square feet suitable for propagating work and general plant culture; and approximately 2,200 square feet in cold frames and hotbeds.

In addition, the department has land for summer culture of carnations gladioli, dahlias, annuals and bedding plants; a perennial garden, an iris garden, and a rose garden.

Floriculture

First Year

Fall Term

Agricultural Opportunities S-1 (Required of women students)
Business Law S-1
Floriculture S-1 (Garden Flowers and Bedding Plants)
Floriculture S-2 (Greenhouse Construction and Heating)
Soils and Crops S-1 (Soil Management)
Vegetable Gardening S-1 (Principles of Vegetable Growing)
*Physical Education S-1
Physical Education S-3 (Hygiene — required of men students)
Tractor Practice

Electives

English S-1 (Required of students having less than two years of High School)
Home Economics S-5 (Home Furnishing)
*Physical Education S-1 is required of men students not participating in football; also required of women students

Winter Term

Applied Mathematics S-1
Floriculture S-8 (Greenhouse Management and Propagation)
Horticulture S-1 (Propagation of Plant Materials)
Horticulture S-2 (Plant Materials)
Soils and Crops S-2 (Fertilizers)
Vegetable Gardening S-2 (Principles of Vegetable Growing)
Physical Education S-2 (Required of women students)
Teaming and Harnessing

Electives

Home Economics S-3 (Problems in Personal and Home Living)
Physical Education S-4 (Basketball and Hockey)

Spring Term

Six months' placement training

Second Year

Fall Term

Agricultural Engineering S-2 (Motors)
Floriculture S-3 (Commercial Production)
Floriculture S-6 (Flower Arrangement)
Fruit Growing S-10 (General course in Fruit Growing)
Horticulture S-12 (Care of Plant Materials)
Physical Education S-2 (Required of men students not participating in football)

Electives

Physical Education S-3 (For women)

Winter Term

Business Management S-1 (Fundamentals of Business Management)
Floriculture S-4 (Commercial Production)
Horticulture S-3 (Plant Materials)
Horticulture S-13 (Plant Breeding)
Rural Sociology S-1 (Social and Economic Problems)
Vegetable Gardening S-4 (Vegetable Forcing)

Electives

Physical Education S-4

Spring Term

Business Management S-2 (Continuation of Business Management S-1)
Floriculture S-5 (Conservatory Plants)
Floriculture S-7 (Herbaceous Plants and their Uses)
Horticulture S-14 (Plant Materials)
Horticulture S-8 (Construction and Maintenance)
Rural Sociology S-2 (Continuation of Rural Sociology S-1)

Electives

English S-3
Physical Education S-5 (Baseball)

Floriculture S-1. (Garden Flowers and Bedding Plants.) I.

This course is intended for students who will take up private estate work or who will specialize in floriculture. It includes a study of the annuals, biennials, herbaceous perennials, and bedding plants which are commonly used in commercial floriculture and in private estate work. Methods of propagation, culture and uses will be considered. Laboratory exercises include work in propagation, planting, study of materials, and planning of beds and borders.

2 class hours and 1 2-hour laboratory period a week.

Credits, 3.

Floriculture S-2. (Greenhouse Construction and Heating.) I.

This course takes up the origin, growth, and importance of the floricultural industry; development of the greenhouse; types of houses and construction; methods of greenhouse heating. Trips are taken to visit greenhouse establishments in the vicinity of Amherst at a total approximate cost of two dollars. 2 class hours and 1 2-hour laboratory period a week.

Credits, 3.

Floriculture S-3. (Commercial Production.) I.

Courses S-3 and S-4 are devoted primarily to a consideration of the important commercial crops. Special attention will be given to the culture (under glass) of roses, carnations, chrysanthemums, violets, and sweet peas. Other cutflower crops and various potted plants will also be considered. All members of the class are required to take a one-day trip to visit a large commercial greenhouse establishment at an approximate cost of five dollars each. Textbooks required during the two courses will be: Holmes, "Commercial Rose Culture"; and Smith, "Chrysanthemum Manual."

2 class hours and 1 2-hour laboratory period a week.

Credits, 3.

Floriculture S-4. (Commercial Production.) II.

A continuation of Floriculture S-3.

2 class hours and 1 2-hour laboratory period a week.

Credits, 3.

Floriculture S-5. (Conservatory Plants.) III.

A study of the plants, both foliage and flowering, which are used in conservatories and in decorative work. Methods of propagation, culture, uses and identification of plants are included in the work. Trips are taken to visit the conservatories at Smith and Mount Holyoke colleges at slight expense. 2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

Floriculture S-6. (Flower Arrangement.) I.

A study of the principles underlying the use of flowers in funeral designs and sprays, table decorations, corsages, vase, bowl and basket arrangements; decorations for public functions; study of color with regard to such work. Limited to students who are majoring in floriculture. Textbooks: White, "Principles of Flower Arrangement"; Harry, "The Art of Floral Designing."

2 class hours and 2 2-hour laboratory periods a week.

Credits, 4.

Floriculture S-7. (The Uses of Herbaceous Plants.) III.

This course is a continuation of Floriculture S-1 and is intended for students specializing in floriculture and general horticulture. It provides opportunity for a more detailed study of many of the plants considered in the preceding course with special emphasis on their uses in gardens and in other types of landscape planting. Lectures, assigned readings, study and identification of plants, planning of borders and gardens. All members of the class are required to take a one-day trip to visit nurseries and perennial gardens at an approximate cost of five dollars each.

3 class hours and 1 4-hour laboratory period a week.

Credits, 5.

Floriculture S-8. (Greenhouse Management and Propagation.) II.

A study of the principles and management of greenhouses, including soils, fertilizers, watering, ventilation, temperature regulation, insect and disease control. The methods of propagation of florists' crops are taken up in detail. Textbook: White's "Principles of Floriculture."

2 class hours and 1 2-hour laboratory period a week.

Credits, 3.

NOTE. — Every student must qualify in tractor practice; and in harnessing and teaming, single and double. Arrangements for practice periods and examinations by special assignment. No student will be put on placement training who has not satisfied these preliminary requirements.

GENERAL HORTICULTURE

The constantly increasing interest in development of grounds, both public and private, for use and enjoyment, has created a demand for men trained to handle the varied problems in the construction and maintenance of these grounds. The course in General Horticulture aims to make the student familiar with these various problems.

Men who have taken this course are to be found in such different fields as foremen in nurseries, or proprietors of nurseries which they themselves have built up; superintendents on private estates, cemeteries, parks, and various public and private institution grounds; foremen for landscape construction firms, and some have developed their own business in landscape construction and grounds maintenance service. There are a large number located as superintendents of golf courses, or greenkeepers. So great has been the demand for this particular branch of the work, an option of special courses has been arranged for men who are looking forward definitely to this field of activity.

With the whole campus as a laboratory, the student finds problems about him every day comparable to those he will meet when he goes out to work. The broad lawns, the walks and drives, the gardens, the greenhouses, the orchards, the vegetable plots, as well as the farms, supply all the various

phases of work which will be encountered on estates, in parks, or in institution grounds. As far as practicable the student is given the opportunity to determine what these problems are and to solve them himself under expert supervision.

On the campus is to be found a large and excellent collection of mature trees, shrubs, and vines. From these plants the student is able to build up a background of plant knowledge; in identification, which is carried on in a special greenhouse for the purpose; in the handling of plants in various stages of their growth, in the nursery and on the campus; and in their ultimate care, pruning and protection against injuries of all kinds. Construction of roads, walks, drainage and other problems involving the moving of earth are especially valuable to those looking forward to landscape construction.

The courses in forestry are designed to give practical instruction in the elements of silviculture, forest improvement, and problems of measurement suitable for students who will be called upon to act as conservators of forested areas and wild life. This work is carried on in the demonstration forest on Mt. Toby, a few miles from the campus.

Offices and class room are located in Wilder Hall.

Horticulture

First Year

Fall Year

Agricultural Opportunities S-1
(Required of women students)
Business Law S-1
Floriculture S-1 (Garden Flowers
and Bedding Plants)
Soils and Crops S-4 (Construction
and Maintenance of Fine
Turf Areas)
Soils and Crops S-1 (Soil Management)
Vegetable Gardening S-1 (Principles
of Vegetable Growing)
Physical Education S-1
Physical Education S-3 (Hygiene
— required of men students)
Tractor Practice

Winter Term

Agricultural Engineering S-2
(Motors)
Applied Mathematics S-1
Horticulture S-1 (Propagation of
Plant Materials)
Horticulture S-2 (Plant Materials)
Soils and Crops S-2 (Fertilizers)
Physical Education S-2 (Required
of women students)
Teaming and Harnessing

Spring Term

Six months' placement training

Electives

English S-1 (Required of students
having less than two years of
High School)
Home Economics S-5. (Home
Furnishing)
Physical Education S-1 is re-
quired of men students not
participating in football; also
required of women students)

Electives

Home Economics S-3 (Problems
in Personal and Home Living)
Physical Education S-4 (Basket-
ball and Hockey)

Second Year

Fall Term

Fruit Growing S-10 (General
Course)
Horticulture S-4 (Principles of
Plane surveying)
Horticulture S-7 (Park and Estate
Maintenance)
Horticulture S-12 (Care of Plant
Materials)
Soils and Crops S-5 (Golf Course
Maintenance)
Forestry S-1 (The Management
of Woodlands)
Physical Education S-2 (Re-
quired of men students not
participating in football)

Winter Term

Forestry S-2 (Estate Forestry)
Fruit Growing S-7 (Fruit Pests)
Horticulture S-3 (Plant Ma-
terials)
Horticulture S-5 (Drawing and
Mapping)
Horticulture S-13 (Plant Breed-
ing)
Rural Sociology S-1 (Social and
Economic Problems)

Spring Term

Floriculture S-7 (Herbaceous
Plants and their Uses)
Fruit Growing S-8 (Spraying)
Horticulture S-6 (Surveying and
Plan Making)
Horticulture S-8 (Construction
and Maintenance)
Soils and Crops S-6 (Golf Course
Maintenance)
Horticulture S-14 (Plant Ma-
terials)
Rural Sociology S-2 (Continua-
tion of Rural Sociology S-1)

Electives

Physical Education S-3 (For
women)

Electives

Physical Education S-4

Electives

English S-3
Physical Education S-5 (Base-
ball)

¹For Golf Course Majors

²For General Horticulture Majors

Horticulture S-1. (Propagation of Plant Materials.) II.

This course will present the principles of plant propagation with special reference to their application to plant materials in nursery practice.
2 class hours and 1 2-hour laboratory period a week. Credits, 3.

Horticulture S-2. (Plant Materials.) II.

The object of this course is to learn to know the trees used in ornamental plantings, giving special consideration to distinguishing characters, and culture.

1 class hour and 2 2-hour laboratory periods a week. Credits, 3.

Horticulture S-3. (Plant Materials.) II.

A continuation of Horticulture S-2, giving special consideration to shrubs and vines.

1 class hour and 2 2-hour laboratory periods a week. Credits, 3.

Horticulture S-4. (Principles of Plane Surveying.) I.

Outdoor practice in the use of simple surveying instruments, as tapes, compasses and levels used in the measurement of land surfaces. Lectures will include explanation of construction and theory of instruments.

1 class hour and 2 2-hour laboratory periods a week. Credits, 3.

Horticulture S-5. (Drawing and Mapping.) II.

This course deals with practice in elementary drafting, using various types of instruments and materials. Use will be made of the notes taken in Horticulture S-4, in the study of contour maps, grading plans, house lots and gardening problems. Practice will be given in the reading and interpretation of typical maps and plans.

1 class hour and 2 2-hour laboratory periods a week. Credits, 3.

Horticulture S-6. (Surveying and Plan Making.) III.

In this course there will be an application of the methods studied in Horticulture S-4 and S-5 to the mapping of small areas, house lots, garden and park areas, staking out areas from plans, grading work and simple garden construction problems.

1 class hour and 2 2-hour laboratory periods a week. Credits, 3.

Horticulture S-7. (Park and Estate Maintenance.) I.

The work of this term will deal with construction and maintenance of roads and walks, especially such roads as are typical to parks and estates, proper foundations and drainage being emphasized; systems of cost keeping for parks and estates and actual cost records analyzed; relationship between superintendent and laborer; and the entire problem of lawn grass seed, illustrated by growing plots of the more common varieties. Throughout the term there will be laboratory exercises pertinent to the typical fall problems.

1 class hour and 2 2-hour laboratory periods a week. Credits, 3.

Horticulture S-8. (Construction and Maintenance.) III.

In addition to the routine spring problems, special emphasis will be made upon the proper cultural methods for lawn building and maintenance. A careful study of all equipment will be made this term.

1 class hour and 2 2-hour laboratory periods a week. Credits, 3.

Horticulture S-12. (Care of Plant Materials.) I.

This course deals with the care of woody ornamental plants under the following heads: planting, pruning, maintenance of soil fertility and winter protection.

2 class hours and 1 2-hour laboratory period a week. Credits, 3.

Horticulture S-13. (Plant Breeding.) II.

This course considers the origin of cultivated plants, the problems and methods of the plant breeder in the improvement of horticultural varieties.

and some of the basic principles of inheritance on which plant improvement is based.

class hours and 1 2-hour laboratory period a week.

Credits, 3.

Horticulture S-14. (Plant Materials.) III.

A continuation of Horticulture S-2 and S-3. In this course special attention is given to the uses of plant materials, as individuals and in combinations, in landscape plantings.

class hour and 2 2-hour laboratory periods a week.

Credits, 3.

Soils and Crops S-4. (Formerly Horticulture S-10.) CONSTRUCTION AND MAINTENANCE OF FINE TURF AREAS. I.

The entire term is devoted to the study of the construction and maintenance of lawns and sports turf. The student must be able to identify the common turf grasses and their seeds, to suggest and evaluate grass seed mixtures for varying conditions, and to understand the general principles of turf fertilization and culture.

class hour and 2 2-hour laboratory periods a week.

Credits, 3.

Soils and Crops S-5. (Formerly Horticulture S-9.) GOLF COURSE MAINTENANCE I.

The designing of golf courses is not the aim of this course, but the influence of design upon maintenance problems will be studied. The seasonal work on golf courses will be studied and practiced. The course is open only to those students who give their major consideration to Golf Course Maintenance, and is a preparatory course for the Winter School for Greenkeepers which is required of students taking this course. Prerequisite: Horticulture S-6.

class hour and 2 2-hour laboratory periods a week.

Credits, 3.

Soils and Crops S-6. (Formerly Horticulture S-11.) GOLF COURSE MAINTENANCE. III.

A continuation of Soils and Crops S-5. Open only to those students taking S-5 and the Winter School for Greenkeepers. Experimental work and practice in diagnosis of turf troubles are particularly emphasized. A field trip is a part of the required work of this course.

class hour and 2 2-hour laboratory periods a week.

Credits, 3.

NOTE. — The following courses, while listed as Soils and Crops to indicate the department offering the work, are included here to emphasize their close connection with the work of this major.

Excursions. For Horticulture S-7, a one-day excursion to estates in Berkshire County. Estimated cost, \$5.00.

For Horticulture S-14, a two-day excursion visiting estates and parks will be arranged. Estimated cost, \$15.00.

These excursions will be required.

NOTE. — Every student must qualify in tractor practice; and in harnessing and teaming, single and double. Arrangements for practice periods and examinations by special assignment. No student will be put on placement training who has not satisfied these preliminary requirements.

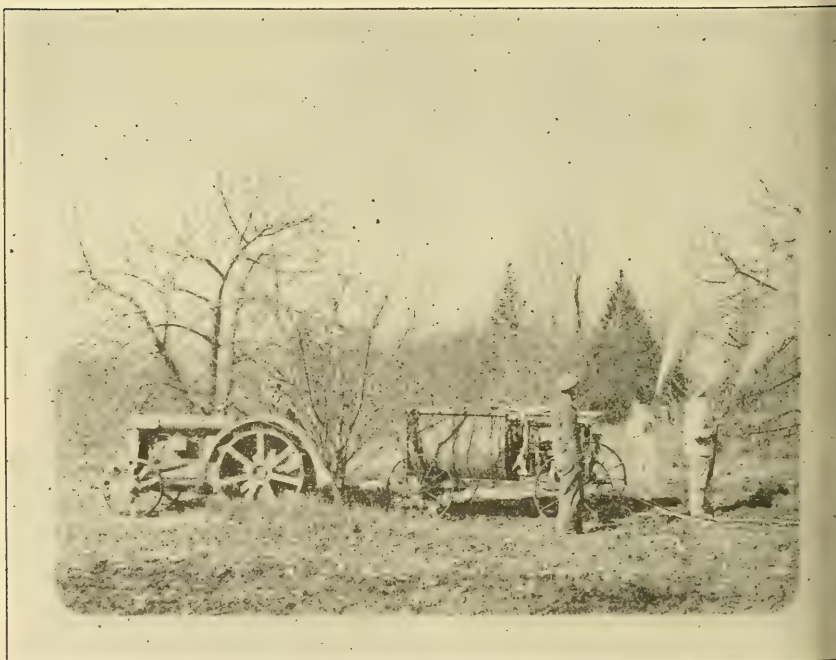
FRUIT GROWING

This course is arranged to give the student a sound practical knowledge of fruit growing and allied subjects. Graduates who are capable and experienced have advanced rapidly to positions of responsibility in some of the larger orchards of New England, and the demand is active for good men in that field.

Some graduates of this course have gone into business for themselves, establishing successful orchards of their own, or pruning, spraying and otherwise caring for a number of small orchards, the owners of which are not prepared to do their own work. Still others are packing house foremen or are engaged in some other marketing activity. The fruit-growing industry of New England is developing rapidly and the opportunities are excellent for good men who are well trained.



Pruning Raspberries



Learning to Spray

Practical work in the orchards under expert supervision is emphasized where possible. It is intended to familiarize students with the best methods that have been devised by experiment stations and leading fruit growers for the production and marketing of high quality fruits under New England conditions. The Department of Pomology has about fifty acres of fruits easily accessible from the classroom, and the orchards are used freely for purposes of instruction. All the common tree fruits and small fruits are grown here on a commercial scale. Many experiments and demonstrations are in progress in the plantations, offering an exceptional opportunity to the student. The Department also has a thoroughly up-to-date storage and packing house, in which are several types of refrigerated and common storage rooms, fruit sizing machines, and other modern equipment of all the principal types. A good equipment is maintained of the principal types of orchard tools and machines, including sprayers, plows, harrows, cultivators, tractor, pruning saws, shears, etc., for studying and trial by students.

Fruit Growing

First Year

Fall Term

Agricultural Opportunities S-1 (Required of women students)
Business Law S-1
Fruit Growing S-1 (Apple Orchard)
Cultury Husbandry S-6 (General Course)
Soils and Crops S-1 (Soil Management)
Vegetable Gardening S-1 (Principles of Vegetable Growing)
Physical Education S-1
Physical Education S-3 (Hygiene — required of men students)
Actor Practice

Electives

English S-1 (Required of students having less than two years of High School)
Home Economics S-5 (Home Furnishing)
Physical Education S-1 is required of men students not participating in football; also required of women students.

Winter Term

Agricultural Engineering S-2 (Motors)
Agricultural Engineering S-4 (Repair of Farm Equipment)
Agricultural Engineering S-7 (Farm Structures)
Fruit Growing S-2 (Minor Tree Fruits)
Fruit Growing S-3 (Pruning)
Soils and Crops S-2 (Fertilizers)
Physical Education S-2 (Required of women students)
Teaming and Harnessing

Electives

Home Economics S-3 (Problems in Personal and Home Living)
Physical Education S-4 (Basketball and Hockey)

Spring Term

Six months' placement training

Second Year

Fall Term

Agricultural Economics S-1 (Farm Economic Problems)
Beekeeping S-1
Forestry S-1 (The Management of Woodlands)
Fruit Growing S-4 (Small Fruits)
Fruit Growing S-5 (Harvesting and Packing)
Horticultural Manufactures S-1
Physical Education S-2 (Required of men students not participating in football)

Electives

Physical Education S-3 (For women)

Winter Term

Agricultural Economics S-2 (Marketing)
Farm Management S-1 (Farm Management and Accounts)
Fruit Growing S-6 (Storage and Marketing)
Fruit Growing S-7 (Fruit Pests)
Horticulture S-13 (Plant Breeding)
Horticultural Manufactures S-2
Rural Sociology S-1 (Social and Economic Problems)

Electives

Physical Education S-4

Spring Term

Beekeeping S-2
Farm Management S-2 (Continuation of Farm Management S-1)
Fruit Growing S-8 (Spraying)
Fruit Growing S-9 (Problems in Orchard Management)
Rural Sociology S-2 (Continuation of Rural Sociology S-1)
Vegetable Gardening S-7 (Commercial Vegetable Gardening)
Soils and Crops S-3 (Field Crops)
Or
Horticultural Manufactures S-3

Electives

English S-3
Physical Education S-5 (Baseball)

Fruit Growing S-1. (Apple Orchard.) I.

This course covers the planting and development of apple orchards and the management of bearing plantations to produce high grade fruit. Sites and soils and the best methods for laying out orchards are discussed along with the best methods of setting trees to insure a good start. The handling of

young trees to bring them into early profitable bearing is given special attention.

The culture of bearing apple orchards is studied in detail to give an understanding of the factors that influence yield and quality of fruit. Methods of soil management are discussed with the adaptation to common soil types and with reference to their advantages and limitations. The experimental plots afford exceptional opportunities to study cultural methods and many subjects are discussed in the orchards.

3 class hours a week.

Credits, 3.

Fruit Growing S-2. (Minor Tree Fruits.) II.

While the apple is and will continue to be our principal tree fruit crop, other tree fruits will always be important here and the well-trained man should know how to care for them. This course deals with the planting and care of peaches, pears, plums, and cherries.

3 class hours a week.

Credits, 3.

Fruit Growing S-3. (Orchard and Vineyard Pruning.) II.

Fruit plantations may be damaged more by unintelligent pruning than by mismanagement in any other single operation. If the orchardist does not know that apple trees bear on spurs, he is likely to cut them off in pruning, and so reduce his chances for a crop. If he is ignorant of the fact that the peach bears on last year's wood, he may remove most of this wood, and incidentally most of his crop. This course aims to give the student a thorough training in the theory of pruning and the methods of bearing of the different fruits.

At the same time, every student is required to prune in the college orchards and vineyards until he becomes reasonably proficient with each kind of fruit.

1 class hour and 2 2-hour laboratory periods a week.

Credits, 3.

Fruit Growing S-4. (Small Fruits.) I.

While orcharding will always be the leading phase of fruit growing in Massachusetts, there are many unusual opportunities for success in growing the various small fruits. This course deals with problems of establishing and handling successfully plantations of strawberries, raspberries, blackberries, currants, and grapes.

The college has large plantations of most of these fruits, so the student has ample opportunity for a wide range of practical work. The aim is to make the course of the utmost practical value, as well as to give the scientific principles on which practices are based.

3 class hours a week.

Credits, 3.

Fruit Growing S-5. (Harvesting and Packing Fruits.) I.

Handling the crop to the best advantage is one of the most important things in successful fruit growing and one which too often is badly managed because the fundamental principles are not understood. The proper time for harvesting is discussed in this course as well as the most satisfactory methods to insure a maximum storage season.

Particular attention is given to packing apples in boxes and barrels, and practice is continued under supervision until the principles are mastered. Many other packages are packed and studied also in relation to the movement of the New England apple crop.

The preparation of fruit for exhibition purposes and the judging of fruit are also considered in this course.

1 class hour and 2 2-hour laboratory periods a week.

Credits, 3.

Fruit Growing S-6. (Storage and Marketing.) II.

The principles of common and refrigerated storage are considered in detail in this course and storage house construction under New England conditions is discussed, with a critical examination of several storages in use on or near the campus.

The competitive position of New England in the apple market is studied in relation to market demands and attention is given to export to foreign markets and to cities outside of New England. Modern methods of marketing are considered with special reference to developing local markets and to co-operation in handling New England apples.

3 class hours a week.

Credits, 3.

Fruit Growing S-7. (Fruit Pests.) II.

Before spraying can be done intelligently, the fruit grower must have an understanding of the life histories of the principal pests for which the spraying is done. This course is concerned with development of insect and disease pests, and particular attention is given to the vulnerable points in their life cycles, at which control measures are directed.

3 class hours a week.

Credits, 3.

Fruit Growing S-8. (Spraying.) III.

In this course a careful study is made of modern methods of spraying. All the principal spray materials are studied, and the student is given practice in their preparation for use and in applying them to the orchard.

The department is well equipped with modern spraying apparatus, from bucket pumps to large power outfits, and students are required to study the construction of these pumps and to operate them in the orchards.

Spraying is very properly regarded as one of the most important operations in connection with growing fruit, and it is the aim of this course to train students to recognize the work of our common orchard pests, to prepare the proper materials for their control, and to apply them efficiently.

1 class hour and 2 2-hour laboratory periods a week.

Credits, 3.

Fruit Growing S-9. (Problems in Orchard Management.) III.

This course provides an opportunity to focus placement training experiences and information acquired in previous courses on the major problems of the New England fruit grower. It is the aim of the course to familiarize the student with conditions under which fruit must be grown here, with current thought on the more important recent developments, and with the sweeping adjustments which are being made in the fruit industry of the Northeastern States.

Each major student must be prepared to take a trip to one of the prominent fruit sections at a cost of \$15.00 to \$25.00.

3 class hours a week.

Credits, 3.

Fruit Growing S-10. (General Course in Fruit Growing.) I. II.

This course is intended to meet the needs of students in the Animal Husbandry and Poultry majors who cannot devote more than one term to the subject of Pomology. It deals with the practical side of the growing and marketing of fruits. Special attention is given to such questions as selection of site for plantation, choice of varieties, grafting and budding, spraying, pruning, cultivation and cover crops, fertilizing the fruit plantation, packing and marketing.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

NOTE. — Every student must qualify in tractor practice; and in harnessing and teaming, single and double. Arrangements for practice periods and examinations by special assignment. No student will be put on placement training who has not satisfied these preliminary requirements.

VEGETABLE GARDENING

Students who complete the course in Vegetable Gardening are fitted to go into commercial work as greenhouse vegetable growers, market gardeners, truck farmers and seed growers. Responsible positions are also open as gardeners on private estates, state and private institutions, as assistants with seed concerns and with retail and wholesale marketing companies.

The vegetable industry is an important vocation in New England and the opportunities are excellent in the various phases of the business for good men or women who are well trained. The Department of Vegetable Gardening is well equipped to give thorough training in that ample class and laboratory rooms are available plus 3,500 square feet of modern greenhouse space and approximately 500 linear feet of hot and cold frames. More than 10 acres of land is also utilized in the production of vegetable crops on a commercial and demonstrational basis including a variety trial plot in which more than 1,000 varieties are grown annually. Equipment of the most modern type is maintained for study and use. The office, class and laboratory rooms are located in French Hall.

First Year

Fall Term

Agricultural Opportunities S-1
(Required of women students)
Business Law S-1
Floriculture S-1 (Garden Flowers
and Bedding Plants)
Floriculture S-2 (Greenhouse
Construction and Heating)
Soils and Crops S-1 (Soil Manage-
ment)
Vegetable Gardening S-1 (Prin-
ciples of Vegetable Growing)
*Physical Education S-1
Physical Education S-3 (Hygiene
— required of men students)
Tractor Practice

Winter Term

Agricultural Engineering S-4 (Re-
pair of Farm Equipment)
Agricultural Engineering S-7
(Farm Structures)
Floriculture S-8 (Greenhouse
Management and Propagation)
Fruit Growing S-3 (Pruning)
Soils and Crops S-2 (Fertilizers)
Vegetable Gardening S-2 (Prin-
ciples of Vegetable Growing)
Physical Education S-2 (Re-
quired of women students)
Teaming and Harnessing

Spring Term

Six months' placement training

Electives

English S-1 (Required of students
having less than two years of
High School)
Home Economics S-5 (Home
Furnishing)
*Physical Education S-1 is re-
quired of men students not
participating in football; also
required of women students)

Electives

Home Economics S-3 (Problems
in Personal and Home Living)
Physical Education S-4 (Basket
ball and Hockey)

Second Year

Fall Term

Agricultural Economics S-1
(Farm Economic Problems)
Agricultural Engineering S-2
(Motors)
Beekeeping S-1
Fruit Growing S-4 (Small Fruits)
Horticultural Manufactures S-1
Vegetable Gardening S-3 (Sys-
tematic Vegetable Growing)
Physical Education S-2 (Re-
quired of men students not
participating in football)

Winter Term

Agricultural Economics S-2 (Mar-
keting)
Business Management S-1 (Fun-
damentals of Business Manage-
ment)
Horticulture S-13 (Plant Breed-
ing)
Horticultural Manufactures S-2
Rural Sociology S-1 (Social and
Economic Problems)
Vegetable Gardening S-4 (Vege-
table Forcing)

Spring Term

Beekeeping S-2
Business Management S-2 (Con-
tinuation of Business Manage-
ment S-1)
Fruit Growing S-9 (Problems in
Orchard Management)
Horticultural Manufactures S-4
Or
Fruit Growing S-8 (Spraying)
Rural Sociology S-2 (Continua-
tion of Rural Sociology S-1)
Vegetable Gardening S-5 (Contro-
l of Insects and Diseases)
Vegetable Gardening S-7 (Prin-
ciples of Vegetable Growing)

Electives

Physical Education S-3 (For
women)

Electives

Physical Education S-4

Electives

English S-3
Physical Education S-5 (Base-
ball)

Vegetable Gardening S-1. (Principles of Vegetable Growing.) I.

Cultural practices employed in the growing of vegetables vary widely from place to place but the fundamental principles underlying these practices are everywhere the same. The lecture work in this course consists of a study of

These principles with illustrations of their applications from a theoretical standpoint. The laboratory work consists of a study of the applications of scientific and practical knowledge to vegetable culture.

class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Vegetable Gardening S-2. (Principles of Vegetable Growing.) II.

The lecture work in this course is a continuation of that in Vegetable Gardening S-1. The laboratory work consists of a series of problems on water requirements, plant nutrition, and the effects of various other factors on crop growth and yield.

class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Vegetable Gardening S-3. (Systematic Vegetable Gardening.) I.

This course is designed to acquaint the student with the identification, nomenclature and classification of the standard types and varieties of vegetables; seed production and variety improvement work; sources of obtaining seed; exhibiting and judging of vegetables.

class hours and 2 2-hour laboratory periods a week.

Credits, 4.

Vegetable Gardening S-4. (Vegetable Forcing.) II.

A study of (1) the geographical distribution of the greenhouse industry, and the part this phase of vegetable production plays in supplying our markets with fresh vegetables; (2) the underlying principles of plant production under glass and their practical applications; (3) economic factors in harvesting and marketing of greenhouse produce.

class hours and 1 2-hour laboratory period a week.

Credits, 3.

Vegetable Gardening S-5. (Control of Insects and Diseases.) III.

This course is intended to give the students majoring in vegetable gardening an understanding of the most common insects and diseases which attack vegetable plants and the most satisfactory methods for controlling these pests.

class hours and 1 2-hour laboratory period a week.

Credits, 3.

Vegetable Gardening S-6. (Principles of Vegetable Growing.) II.

This course is similar to course S-1 except that it is more comprehensive. The practical studies are limited chiefly to the crops with which this group of students is likely to have to deal.

class hours and 1 2-hour laboratory period a week.

Credits, 3.

Vegetable Gardening S-7. (Principles of Vegetable Growing.) III.

A knowledge of the principles underlying the commercial vegetable growers' problems is necessary before these problems may be satisfactorily solved. Weekly assignments dealing with specific problems as encountered in the vegetable growing business are worked out by the students. Organized trips through the Connecticut Valley and one trip through the market gardening section near Boston are required. This latter trip requires about three days and costs each student approximately fifteen dollars.

class hours and 1 2-hour outside laboratory period a week.

Credits, 3.

NOTE. — Every student must qualify in tractor practice; and in harnessing and teaming, single and double. Arrangements for practice periods and examinations by special assignment. No student will be put on placement training who has not satisfied these preliminary requirements.

RELATED SUBJECTS IN OTHER DEPARTMENTS

Farm Economics and Marketing

Instruction in agricultural economics is given with a view toward presenting the business side, or economics of agriculture. The required course is divided into two parts given in separate terms. The approximate division of subject matter for each term is indicated below.

Agricultural Economics S-1. (Farm Economics Problem.) I.

The purpose of this course is to introduce students to the more important

economic problems facing New England farmers. Increasing competition with other farm sections, long-time movements of farm prices and farm profits, farm credit, farm taxation, tariffs and other farm relief measures are some of the problems to be considered.

(See requirement for marketing trip below.)

3 class hours a week.

Credits, 3.

Agricultural Economics S-2. (Marketing.) II.

This course deals largely with economic problems arising out of marketing farm products. Particular attention is given to marketing methods used in New England and to the comparison of local methods with methods used by farmers in competing sections. Principles and methods of co-operative marketing used by successful co-operative associations are studied in detail in order to show how New England farmers may meet competition from associations in other sections, either as individual producers or as officers or members of local associations.

A two-day marketing trip to Boston or New York is required of all students in order to study at first hand the methods of handling products on the wholesale markets. This trip may be required in either term.

3 class hours a week.

Credits, 3.

Agricultural Engineering S-1. (Farm Engineering.) I.

This course covers the material given in Agricultural Engineering S-4 and in addition includes a study of field implements as used on the general New England farm. The principles underlying the practice of farm drainage are discussed, and practice is given in the use of simple leveling instruments for the purpose of accurately grading tile drainage ditches.

2 class hours and 3 2-hour laboratory periods a week.

Credits, 5.

Agricultural Engineering S-2. (Farm Motors.) I. II.

This course deals with the gasoline engine as used for stationary work, automobiles, and tractors. Instruction is given by means of lectures and textbooks, and by operating and repairing stationary engines, automobiles and tractors. Special attention is given to overhauling and repairing.

3 2-hour laboratory periods a week.

Credits, 3.

Agricultural Engineering S-3. (Carpentry.) I.

This course gives practice in the care and use of carpenters' tools through bench work, repair of farm equipment, and building construction. Small buildings are erected by the students to give practice in all the phases of house construction. Practice is given in the building of forms and in the mixing and placing of concrete.

2 2-hour laboratory periods a week.

Credits, 2.

Agricultural Engineering S-4. (Repair of Farm Equipment.) II.

The object of this course is to give practice in the handling of tools, which will help in the repair of farm machines and miscellaneous farm equipment. Practice is given in forging, pipe fitting, soldering, and the use of machinists' tools. Part of the course is given over to the study of water supply systems, electric motors and wiring.

1 class hour and 2 2-hour laboratory periods a week.

Credits, 3.

Agricultural Engineering S-5. (Dairy Mechanics.) III.

This course is planned for men who are fitting themselves to take charge of dairy plants or allied lines of work. A study of steam boilers, pumps, steam traps, line shafts, belting, electric motors, milking machines, and refrigeration plants.

3 class hours and 2 2-hour laboratory periods a week.

Credits, 5.

Agricultural Engineering S-7. (Farm Structures.) I, II, III.

A study of the building materials commonly used in farm construction: details of construction and simple structural mechanics; the principles of design of such farm buildings as the dairy stable, hog house, horse barn,

general purpose barn, poultry house, fruit and vegetable storage buildings. Each student will have opportunity to design in detail one of the major farm buildings in which he is particularly interested.
 class hour and 2 2-hour laboratory periods a week. Credits, 3.

Agricultural Opportunities for Women S-1. I.

A study of problems of vocational adjustments and of opportunities for women in agriculture and related fields.
 class hours a week. Credits, 2.

Applied Mathematics S-1. II.

A careful study of fractions, decimals, percentage, ratio and proportions, powers, roots, denominate numbers and elementary mensuration. Especial attention will be given to methods of computation and to practical applications to work given in the Horticultural Department.
 class hours a week. Credits, 5.

Bacteriology S-1. (Bacteriology and Rural Hygiene.) I, II.

In this course bacteria are studied as to types and reproduction, together with methods of dissemination, followed by discussions on these micro-organisms as related to man and his environment.

The work of the course will be divided into sections having to do with the study of the sanitary production and handling of milk, water and food and to a section having to do with the study of bacteria in terms of diseases of man and animal and the relationship to environmental factors such as air, humidity, food and personal hygiene. The sanitary production and distribution of milk is an important problem to a community and under the discussions pertaining to milk are to be considered various avenues of infections, methods of maintaining a sanitary production and how to establish suitable means for checking anything pertaining to contamination. Since water supplies are of special importance to man, the construction of wells, cisterns, etc., will be considered briefly followed by discussions relative to contaminations and their consequences. The proper disposal of sewage offers a real problem of no small importance. Therefore, in this course will be discussed construction and installation of septic tanks, together with the study of some of the bacteriological work to establish their efficiency. Work has been planned in this course to present some of the problems pertaining to the production and distribution of foods, special attention being given to preservation methods.

In the latter part of this course will be presented some problems associated with the diseases of man and animal. Various disinfectants will be considered and some time will be devoted to a discussion on the use and preparation of serums for fighting disease.

The purpose of this course will be to acquaint the student with the importance of bacteria and the subject of bacteriology in agriculture, industry, the arts and the relationship of this subject to the health of man and animals.
 class hours a week. (Animal Husbandry, Poultry and Dairy Manufactures majors.) Credits, 3.

Bacteriology S-2. (Bacteriology and Rural Hygiene.) II.

This course is a continuation of Bacteriology S-1 and is required of students taking that course.
 class hours a week. (Animal Husbandry, Poultry and Dairy Manufactures majors.) Credits, 3.

Bacteriology S-3. (Dairy Bacteriology.) I.

Bacteria and other micro-organisms are the responsible agents for changes which occur in milk, and for the contagion which sometimes causes diseases. They are found in milk at times when leaving the udder, they get in with the dust and dirt while milking and they adhere to the dairy utensils which carry them over from one milking to the next. From the cow to the consumer there is the constant presence of these micro-organisms to contend with, on the one hand, and to foster on the other.

Many of these changes occurring in milk are undesirable, such as rop milk, sour milk, bitter milk, tainted milk, etc. Many of these changes are encouraged as the ripening of cream for butter, of milk for cheese, of milk for milk drinks. The former are fought, the latter fostered.

Micro-organisms of typhoid fever, scarlet fever, diphtheria and other diseases find their way by means of milk to the consumer and produce epidemic forms of these diseases.

Much time is spent in making plate counts and interpreting results. The different bacteriological tests are studied, such as Breed and Methylene Blue. The proper use of these methods will quickly enable one to locate the source of trouble and check any further continuance.

It is evident, therefore, that to handle milk and milk products safely it is desirable to know something of the agents which are the source of so much attention in the dairy. This indicates the nature of the substance of the course. This course is required of all students who elect dairying as one of their special lines of work.

1 4-hour and 2 3-hour laboratory periods a week.

Credits, 3

Beekeeping S-1. I.

This course and the one following comprise a general consideration of the biology of the honey bee and the elements of practical beekeeping. This includes the life history of the individuals and their relation to the colony, their structure, normal behavior and instincts which form the basis of practical beekeeping. The best methods of management, which will provide most productive colonies for greenhouse and orchard pollination, and honey production are studied. Consideration is given to the problems of marketing and control of bee disease. As far as possible, the work is made individual in the construction of equipment and manipulation of bees.

The problems of fall management and wintering are made the basis of the course while those concerning spring and summer management are covered in Beekeeping S-2.

2 class hours and 1 2-hour laboratory period a week.

Credits, 1

Beekeeping S-2. (Beekeeping.) III.

This course is a continuation of Beekeeping S-1 and is required of students taking that course.

2 class hours and 1 2-hour laboratory period a week.

Credits, 1

Business Law S-1. I.

Required for freshmen. To consist of a particular study of the contract, drawing, reading and interpretation with specific problem work. Commercial paper, torts, equity and personal rights presented by lectures during the course. Particular stress is placed on the reasoning process.

5 class hours a week.

Credits, 1

Business Management S-1. II.

This course is designed primarily for students majoring in Floriculture. It involves a study of records and accounts used by florists; costs and prices; uses of capital and credit; house and store management; advertising; buying and selling; economic use of labor and equipment; general business trends; affecting the flower business; how the florist should make adjustments to meet economic changes; analyses of going concerns; and finally a bringing together of all the information studied and applying it to the successful organization of a business. The entire course is to be made as applicable as practical as possible.

2 class hours and 1 2-hour laboratory period a week.

Credits, 1

Business Management S-2. III.

A continuation of Business Management S-1 and is required of students taking that course.

2 class hours and 1 2-hour laboratory period a week.

Credits, 1

English Composition S-1. I.

Required for freshmen with less than two full years of high school preparation, or its equivalent; and elective for others. To consist of directed readings (one book or its equivalent per week); essay writing (one short essay, book report, personal or business letter, or writing of a similar nature per week); and an oral presentation (a five-minute address or talk on an assigned topic to be prepared for each week, and as many heard as time permits).

3 hours a week.

Credits, 3.

English Composition S-3. III.

Required of seniors interested in dramatic presentation and elective for the rest. This course is a continuation of the freshman course; but lays particular stress on the drama and dramatic presentation. (All dramatic presentation endeavored by the Two-Year Course, or other short courses to be under the direction of the instructor in English Composition.)

3 hours a week.

Credits, 3.

Farm Management S-1. (Farm Management and Accounts.) I, II.

The work in this course involves a study of farm records and accounts; costs and prices of farm products; uses of capital and credit; types of farming; selection of crop and livestock enterprises; size, diversity and production as related to the successful farm business; farm layout and arrangement; economic use of labor, power and equipment; detailed analyses of both successful and unsuccessful farms, how the farmer should make adjustments to meet economic changes; and finally, a bringing together of the information gained and applying it to the successful organization of a farm business.

Actual farm records are used to illustrate the above points. The entire course is made as applicable and practical as possible.

2 class hours and 1 2-hour laboratory period a week.

Credits, 3.

Farm Management S-2. (Farm Management and Accounts.) II, III.

This course is a continuation of Farm Management S-1 and is required of students taking that course.

2 class hours and 1 2-hour laboratory period a week.

Credits, 3.

NOTE. — Farm Management S-1 and S-2 are given in the fall and winter term for students majoring in Dairy Manufactures and Animal Husbandry; in the winter and spring terms for students majoring in Poultry Raising and Fruit Growing.

Forestry S-1. (The Management of Woodlands.) I.

A course designed to give the student a working knowledge of methods used in forest measurement for the purpose of determining the volume and value of the forest growing stock on a small unit forest. Emphasis is placed on methods of improving the quality of forest products and in maintaining a sustained annual yield of desirable materials.

Field work is conducted on the Mount Toby demonstration forest, the property of the College, where representative New England forest types are available for study. The field work is of a practical nature and consists largely in the solution of a problem in forest measurement.

The lecture periods are devoted chiefly to a study of the economic aspects of forestry with special reference to New England.

1 class hour and 1 4-hour field period a week.

Credits, 3.

Forestry S-2. (Estate Forestry.) II.

A course designed to give the student a knowledge of the care of the forested portions of estates. Emphasis is placed on the study of the silvical characteristics of our native tree species; on silvicultural methods; supplementary planting; the prevention of damage by various agencies; forest improvements and the conservation of desirable wild animal life.

1 class hour and 1 4-hour field period a week.

Credits, 3.

Home Economics S-1. (Clothing Selection.) I.

This course is based on the need of good judgment in the selection of clothing, both ready made and home made. It includes a study of design, color, appropriate and becoming clothing with emphasis on the selection of fabrics from the standpoint of use, value and cost. (Offered in 1933-34.)
3 class hours a week.

Credits, 3

Home Economics S-2 (Food Selection.) II.

This course is a study of the nutritional needs of persons of different age and activity and the choice of foods to meet these needs. Consideration will also be given to food problems related to the experiences of one living away from home as well as to basic principles in the preparation and serving of simple meals. (Offered in 1933-34.)

3 class hours a week

Credits, 3

Home Economics S-3. (Problems in Personal and Home Living.) II.

This is a study of some of the problems in everyday living which must be considered intelligently if one is to become a useful member of society (Offered in 1932-33.)

3 class hours a week.

Credits, 3

Home Economics S-5. (Home Furnishing.) I.

This course emphasizes the importance of attractive surroundings in creating a happy home life. It aims to develop good judgment and high standards in the selection of home furnishings. The discussions include the basic principles of good design, the use of color, the treatment of walls, floors and windows, and the choice, cost and arrangement of all types of furnishing found in the average home. (Offered in 1932-33.)

3 class hours a week.

Credits, 3

Horticultural Manufactures S-1. I.

The utilization of culls and low grades of fruits and vegetables is becoming a more important problem each year. Producers should be able to market their whole crop at a profit. The general problems studied in this course will be: the manufacture of apple products from cull apples; the canning of fruits and vegetables available at this season, together with the manufacture of their various products, such as jams, jellies, conserves, pickles, etc.

Students will be required to keep accurate costs of materials in all canning and manufacturing operations together with a record of methods used.

1 class hour and 2 2-hour laboratory periods a week.

Credits, 3

Horticultural Manufactures S-2. II.

This is a continuation of Horticultural Manufactures S-1. The term work is divided into two distinct units. (1) The preservation of the small fruits and the manufacture of their products. (2) The manufacture of special fruit products and laboratory exercises and lectures on the home making of confections. Prerequisite: Horticultural Manufactures S-1.

1 class hour and 2 2-hour laboratory periods a week.

Credits, 3

Horticultural Manufactures S-3. III.

This is a continuation of Horticultural Manufactures S-1 and S-2. The manufacture of maple products, fermented pickles, and the canning of sprouts and vegetables will be the principal subjects studied. Students will be given opportunity to make special studies along the lines of their greatest interest. Prerequisites: Horticultural Manufactures S-1 and S-2.

1 class hour and 2 2-hour laboratory periods a week.

Credits, 3

***Horticultural Manufactures S-4. II.**

The class and laboratory exercises in this course are planned to meet the needs of students who major in Dairy Manufactures. General principles of food preservation and their application to this subject will be discussed in class exercises. The various methods of preserving fruits, the manufacture of fruit products, and some of the more commonly used flavors and extracts

and the judging and testing of commercial packs will be studied in the laboratory.

1 class hour and 2 2-hour laboratory periods a week.

Credits, 3.

Rural Sociology S-1. II.

Required for seniors. A study of the individual and his relationships and conflicts in society, particular note to be taken of rural society and its problems. Individual topics assigned and papers prepared.

3 class hours a week.

Credits, 3.

Rural Sociology S-2. III. *

Required for seniors. Specific problem study, individual topics assigned and papers prepared and discussed in class. Rural religion, 4-H Club work, extension service and experiment station work and their significance in the farm problem to be presented by specialists in the field.

2 class hours a week.

Credits, 2.

Soils and Crops S-1. (Soil Management.) I.

Every agricultural interest is vitally concerned with the soil, its adaptations and its management for plant production. This course treats of the selection of suitable soils for the special purposes of agriculture, horticulture and floriculture, and with the management of soils with regard to moisture control, tillage, organic matter, soil bacteria, and soil acidity.

The laboratory work gives training in the use and interpretation of the maps of the U. S. Soil Survey and in tests of soil texture, organic matter and acidity. Practical field work will be given in judging the crop adaptation and value of soils, and field demonstration of the use of tillage tools on the college farm.

As a field project the student will be required to make a study of some farm, nursery or florist's plant. This project includes a survey of the soil conditions, and methods of soil and crop management, with analysis of the relation of the soil to the enterprise as a whole.

2 class hours and 1 3-hour laboratory period a week.

Credits, 3.

Soils and Crops S-2. (Fertilizers.) II.

This course deals with the storage and handling of manure and its use in crop production, with the selection and use of lime materials, and with the economical purchase and use of commercial fertilizers. The interpretation of fertilizer analysis and guarantee will be studied. Special attention will be given to the newer concentrated fertilizer materials and to those produced from atmospheric nitrogen. The laboratory work will give practice in identification of fertilizer materials, and in the calculation of fertilizer formulas, and preparation of fertilizer mixtures.

2 class hours and 1 2-hour laboratory period a week.

Credits, 3.

Soils and Crops S-3. (Field Crops.) III.

This course is planned to acquaint the student with the best and most successful practices of production and harvesting of field crops. Problems usually arising in connection with these practices will be studied. Special attention will be given to the hay crop, corn, potatoes, roots, and pastures. Field observation of growing crops and laboratory work in the identification of seeds of grasses, clovers, weeds and small grains, in tests of purity and germination of seeds and judging of different types of corn and potatoes will be given. Before completing the course the student will be expected to know how to select varieties, test seed, prepare the soil, select and apply fertilizer, plant, cultivate, harvest and store the field crops important in Massachusetts.

2 class hours and 3 2-hour laboratory periods.

Credits, 5.

Veterinary Science S-1. (Animal Sanitary Science.) III.

Conservation of the health of animals is the keystone of successful animal husbandry. This course acquaints students with the essentials upon which the health of animals depends. In order that students may later guard the

*This course may be withdrawn at the discretion of the department if conditions warrant.

animals in their charge, attention is given to conditions favoring communicable and non-communicable diseases, and to prophylactic measures.

5 class hours a week.

Credits, 5.

PHYSICAL EDUCATION

WOMEN

All women students are required to take physical education throughout the first year and may elect it with credit during the first and second terms of the last year.

Undergraduate women students are required to furnish a physical examination report from their family physician.

Physical Education S-1. I.

This course will include such outdoor sports as soccer, basketball, tennis and hiking.

2 class hours a week.

Credits, 2.

MRS. HICKS.

Physical Education S-2. II.

This course will include posture exercises, tap dancing, badminton, volley ball, and games.

2 class hours a week.

Credits, 2.

MRS. HICKS.

Physical Education S-3 and S-4. I-II. (Elective for seniors.)

Credits, 2.

MRS. HICKS.

MEN

Required Courses.

Physical Education S-1. I. (RECREATION. — For freshmen. Outdoor games.)

The following outdoor games are taken up: Soft ball, touch football, soccer, golf, and swimming. Men may elect football, cross country, or tennis. The course aims to give every man the opportunity to develop sufficient control over his body to enable him to get pleasure from physical activities and to establish correct health habits.

2 laboratory hours a week.

Credits, 2.

Physical Education S-2. I. (RECREATION. — For seniors. Outdoor games.)

Includes the games of badminton, volley ball, archery and swimming, with the object of giving the men a fund of exercise material for use in after school days. Men may elect football, cross country, or tennis.

2 laboratory hours a week.

Credits, 2.

Physical Education S-3. I. (HYGIENE. — For freshmen.)

Lectures on personal hygiene including the physiological basis for sound health habits, the importance of the systematic planning of a student's daily program in order to provide the proper amounts of time for study with suitable periods of sleep, relaxation, recreation and sports; posture, appropriate

appropriate types of exercises, proper nutrition, social adjustment, the necessity for frequent medical, optical and dental advice, sanitation and group health requirements.
1 class hour a week. Credit, 1.

Elective Courses

Physical Education S-4. II. (RECREATION. — For freshmen and seniors. Basketball and Hockey.)

Students electing this course must be regular members of the basketball or hockey squads and report regularly for practice with those squads. Credits, 2.

Physical Education S-5. III. (RECREATION. — For seniors. Baseball.)

Students electing this course will be divided into teams which will plan an intramural schedule. These men must report regularly for practice whenever scheduled. Credits, 2.

Certificate of Citizenship

The Massachusetts State College charges a tuition fee of \$60 a term to students who are not residents of Massachusetts. In order to satisfy the college authorities that an applicant is entitled to state tuition of \$20 per term, they require a statement signed by the clerk of the city or town in which the applicant resides, certifying to the fact that the parent or guardian of the applicant is a legal resident of said city or town. Such a statement may be made on the form below. If this is not presented when the student registers the Treasurer has no option but to collect tuition on the above basis.

This is to certify that I am the father mother guardian
of
Student's Name

Signed

This is to certify that on the date specified below
. is a legal resident of
Above Signee
., Massachusetts.
Town or City
Signed
Town or City Clerk

Date
Seal

Mail this blank to ROLAND H. VERBECK, *Director of Short Courses*
MASSACHUSETTS STATE COLLEGE, AMHERST, MASS.
This certificate must be filed with application blank if lower tuition rate for citizens of Massachusetts is to be secured.

SHORT COURSES AT THE MASSACHUSETTS STATE COLLEGE

Short courses are based on the idea that the motive which inspires study is the most significant factor in study itself, and that this motive rises when the student himself realizes he faces a problem that calls for a solution. Therefore there is no age limit. Enrolled in short courses are found the young and the old, the experienced and the inexperienced, the theoretical and the practical. In this grouping there is a value, since students learn from each other as well as from the instructors. Practically all Short Course students intend to make a direct application of the knowledge given. Hence the aim of Short Courses work is to offer the largest amount of information and training in agricultural and horticultural lines in the shortest possible time. During the past twenty years Short Courses have served hundreds of students in this Commonwealth and the demand for these courses in recent years has steadily continued.

DIRECTORY OF INFORMATION

A. The College.

Those desiring college catalogues, the President's annual report, and other pamphlets giving full information relative to entrance requirements, course of study, expenses, opportunities for student labor, and so forth, should address Robert A. Hawley, Secretary, Amherst, Mass.

All questions regarding admission to the college, either to the freshman class or to advanced standing, should be addressed to William L. Machmer, Dean of the College, Amherst, Mass.

B. Experiment Station.

The Experiment Station conducts investigations in as many lines of agricultural science and practices as its funds will permit. It has charge of the inspection of commercial fertilizers, commercial feeding stuffs, and mill testing apparatus. Branch stations in cranberry and market-garden culture are maintained in other sections of the State.

The station considers the farmers' problems to be its problems, and desires to keep in touch with them.

Requests for bulletins reporting the results of experiments and inspection, and for other information on the work of the station, should be addressed to Fred J. Sievers, Director of the Experiment Station, Amherst, Mass.

C. The Graduate School.

Questions relating to courses offered leading to the degrees of Master of Science and Doctor of Philosophy, admission and work required, should be addressed to Fred J. Sievers, Director of the Graduate School, Amherst, Mass.

D. The Extension Service.

Inquiries of a general nature regarding the work of the Extension Service, extension publications, or requests for new lines of work should be addressed to Willard A. Munson, Director of Extension Service, Amherst, Mass.

E. Short Courses.

For information concerning the Short Courses, the Stockbridge School of Agriculture, the Ten-Weeks Winter School, the Summer School, write or apply to Roland H. Verbeck, Director of Short Courses, Amherst, Mass.

APPLICATION FOR ENROLLMENT IN THE STOCKBRIDGE SCHOOL OF AGRICULTURE

Name.....Date.....

Home Address.....Street.....State.....

Present Occupation.....Age.....

School or College Attended:

Name of School.....

Place.....

Number of Years in High School.....

Indicate by a check mark the course in which you desire to register. Do not check more than one.

1. Animal Husbandry

5. Floriculture

2. Dairy Manufactures

6. Vegetable Gardening

3. Poultry Husbandry

7. General Horticulture

4. Fruit Growing

References. — I am personally acquainted with the above applicant, and know.....to
be of good moral character, industrious, studious, and physically capable.

1 Name.....Position.....

Address.....

2 Name.....Position.....

Address.....

(Two references are required, and should not be members of your own family. Your minister and your teacher, or a former employer, are desirable. These persons should sign the application themselves.)

Mail this blank to ROLAND H. VERBEEK, *Director of Short Courses*.

MASSACHUSETTS STATE COLLEGE, AMHERST, MASS.

Important. — Be sure to file citizenship certificate if State tuition rate is claimed.

The Ten Weeks' Winter School

The dates of this school are approximately from January 1 to March 10.
The following courses or group programs were offered in 1932.

Ten Weeks' Course in Greenkeeping.

Ten Weeks' Course in Poultry Raising.

Five Day Course in Milk and Cream Testing; Analyzing and Inspecting
Milk Products.

Five Day Course in Milk Plant Operation and Manufacture of Surplus
Milk Products.

Five Day Course in Ice Cream Making for beginners.

Five Day Course in Ice Cream Making for experienced men.

The Winter School appeals to practical farmers and all who wish short in-
tensive, yet thorough courses suited to the practical man.

For catalog of any of the schools, write
Director of Short Courses, M. S. C., Amherst, Mass.

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ANNOUNCEMENT

OF THE

WINTER COURSES

FOR

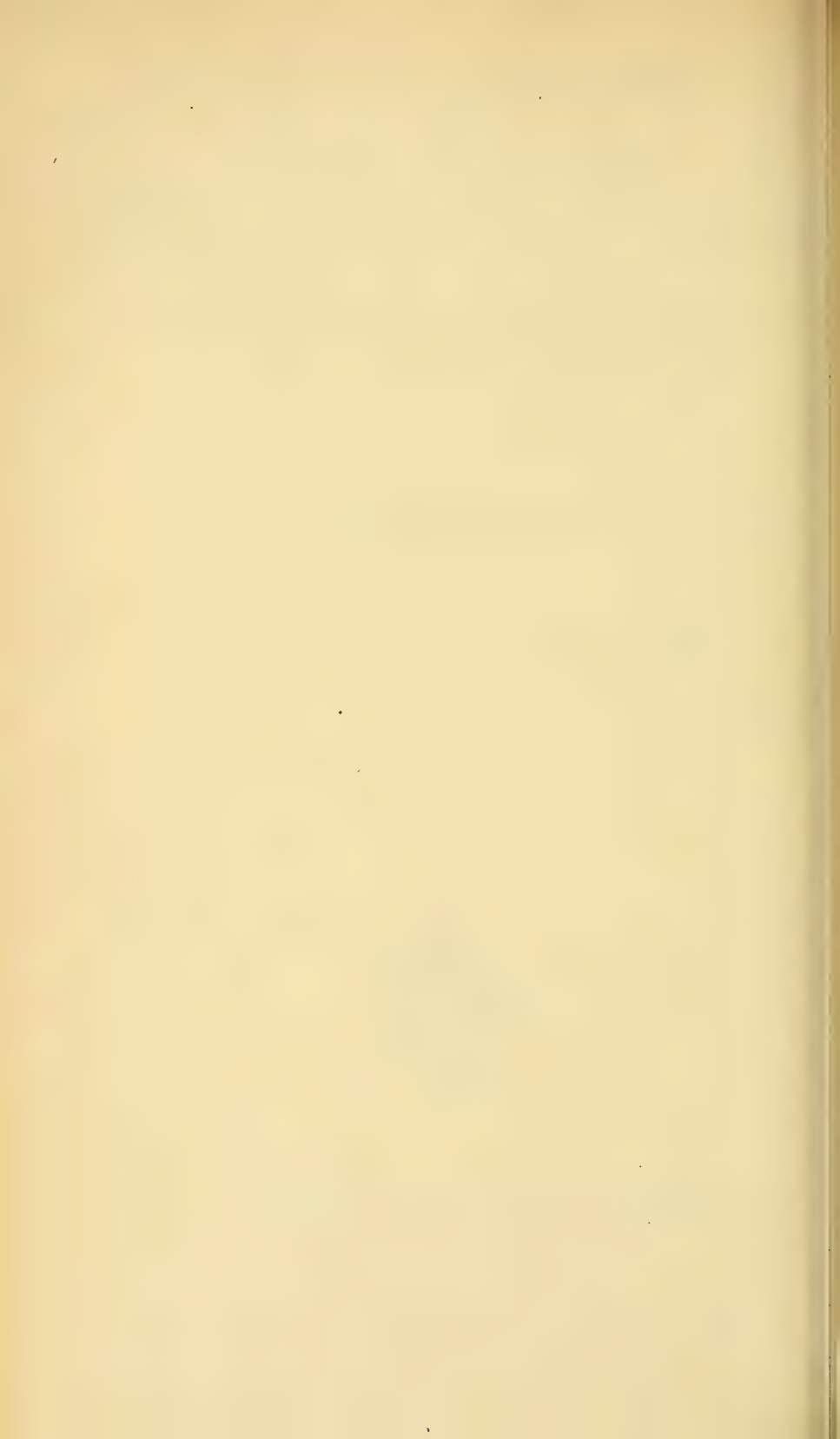
1933



Massachusetts State College

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GUY V. GLATFELTER, M.S.	Animal Husbandry
<i>Assistant Professor of Animal Husbandry</i>	
CHRISTIAN I. GUNNESS, B.S.	Agricultural Engineering
<i>Professor of Agricultural Engineering, Head of Department</i>	
HARRY G. LINDQUIST, M.S.	Dairying
<i>Vocational Instructor in Dairying</i>	
MERRILL J. MACK, M.S.	Dairying
<i>Assistant Professor of Dairying</i>	
MINER J. MARKUSON, B.S.	Agricultural Engineering
<i>Assistant Professor of Agricultural Engineering</i>	
JOHN B. NEWLON.	Agricultural Engineering
<i>Instructor in Agricultural Engineering</i>	
RANSOM C. PACKARD, B.S.A.	Bacteriology
<i>Vocational Instructor in Bacteriology</i>	
GEORGE G. PUSHEE	Agricultural Engineering
<i>Instructor in Agricultural Engineering</i>	
OLIVER C. ROBERTS, B.S.	Pomology
<i>Instructor in Pomology</i>	
WILLIAM C. SANCTUARY, B.S.	Poultry
<i>Professor of Poultry Husbandry</i>	

- WILLIAM H. TAGUE, B.S. Agricultural Engineering
Assistant Professor of Agricultural Engineering.
- CHARLES H. THAYER Agronomy
Instructor in Agronomy
- JOHN H. VONDELL Poultry
Instructor in Poultry Husbandry and Foreman of Poultry Plant
- FRANK A. WAUGH, M.S. Landscape Architecture
Professor of Landscape Architecture and Head of Department

5
APPLICATION FOR ENROLMENT
IN THE
TEN WEEKS' WINTER SCHOOL

I hereby make application for admission to the Ten Weeks' Winter Courses which are to begin January 3, 1933.

Date.....

Name.....

Home Address.....

Business Address.....

Age..... Present Occupation.....

Previous Schooling.....

Check special course in which you desire to register.

- | | |
|---|--------------------|
| 1. The Winter School in General Farming | (Jan. 3 — Mar. 11) |
| 2. The Winter School in Poultry Raising | (Jan. 3 — Mar. 11) |
| 3. Ten-day course in Dairy Bacteriology | (Jan. 3 — Jan. 14) |
| 4. The Five Day Dairy Courses: | |
| (a) Milk and Cream Testing; Analyzing and Inspecting
Milk Products | (Jan. 16-21) |
| (b) Milk Plant Operation and Manufacture of Surplus
Milk Products | (Jan. 23-28) |
| (c) Ice Cream Making Course for Beginners | (Jan. 30 — Feb. 4) |
| (d) Ice Cream Making Course for Experienced Men | (Feb. 6-11) |

Mail this blank to Roland H. Verbeck, Director of Short Courses, Massachusetts State College, Amherst, Mass.

Note: — File application blank in back of catalog if for Greenkeeping Course.

The college reserves, for itself and its departments, the right to withdraw or change the announcements made in its catalogue or in any of its official publications.

MASSACHUSETTS STATE COLLEGE WINTER SHORT COURSES

January 3 to March 11, 1933

The Ten Weeks' Winter School has been maintained by the college for over twenty years. It meets a definite need in providing instruction for groups of men and women who can leave their regular duties during the winter months. The school closes in time for students to begin practical work in the spring.

The following courses or group programs are offered in 1933 for a full ten weeks from January 3 to March 11 with the exception of the course for Greenkeepers which runs one week longer:

1. General Farming (Including dairy farming and fruit growing).
2. Poultry Raising.
3. Greenkeeping (An eleven weeks course — January 3 to March 15, 1933).

Each of these courses except General Farming requires a definite number of students as a minimum if the course is to be given. Also there is a maximum limit to the size of classes, and in the greenkeeping course early application is always advisable. See explanation of limited enrolment under each course on following pages.

In addition to these special ten weeks' courses, there are four five-day courses offered.

1. Milk and Cream Testing; Analyzing and Inspecting Milk Products, — Monday, January 16, 1:30 P. M. to Saturday, January 21, 12 M.
2. Milk Plant Operation and Manufacture of Surplus Milk Products, — Monday, January 23, 1:30 P. M. to Saturday, January 28, 12 M.
3. Ice Cream Making Course for Beginners, — Monday, January 30, 1:30 P. M. to Saturday, February 4, 12 M.
4. Ice Cream Making Course for Experienced Men, — Monday, February 6, 1:30 P. M. to Saturday, February 11, 12 M.

These are so arranged that a student may take any one or all of the courses if he desires.

A ten-day course in Dairy Bacteriology will be offered from January 3 to January 14.

Winter School certificates will be awarded to students who complete the full work in the courses taken, with satisfactory grades.

Entrance Requirements

No entrance requirements have been fixed other than that the student shall be at least eighteen years of age and shall have completed the elementary or common schools.

Tuition, Fees and Expenses

There is a tuition fee of \$10.00 for the full Ten Weeks' Winter School Program and each student is required to pay to the Treasurer a \$5.00 registration fee. There are no laboratory fees in connection with any of the courses. The registration fee and tuition fee, unless sent in advance, must be paid at the time of registration to the Treasurer of the college. There is also a health fee of \$1.50 for the full term, not for the five-day or ten-day courses.

Board may be obtained at the college dining hall cafeteria service for \$6.00 a week. Rent for furnished rooms in private houses varies in price from \$2.50 to \$4.00 a week for each occupant.

The Short Course Office will be glad to assist students in locating rooms.

Registration

Students will be registered in classes Tuesday, January 3, at the Short Course Office. Classes will begin promptly Wednesday morning, January 4, except Dairy Short Courses (5 day) which begin the Monday afternoon at 1:30 P. M. following registration in the morning, on January 16.

Upon arrival the student should report at the office of the Director of Short Courses, located in South College; call Amherst 900, if telephoning.

TEN WEEKS' COURSE IN GENERAL FARMING

January 3 to March 11, 1933

For 1933 two groups of courses are offered under the General Farming program.

A student should make his choice from one of these groups and take the full list of studies under that group. It is not possible to allow mixed programs with classes selected from each group.

All classes included in these offerings will be taken with the students of the two-year course in the Stockbridge School of Agriculture with the exception of the class in Farm Management and Accounts which will include Winter School students only.

Applications should be sent in as soon as possible.

Group I

		<i>Lect.</i>	<i>Labs.</i>	<i>Hrs.</i>
Fertilizers	(Soils and Crops S2)	2	1	4
Principles of Feeding	(Animal Husbandry S2)	5	—	5
Farm Management and Accounts		3	1	5
Fruit Growing	(Fruit Growing S10)	3	2	7
Farm Motors	(Agricultural Engineering S2)	—	3	6

Group II

		<i>Lect.</i>	<i>Labs.</i>	<i>Hrs.</i>
Fertilizers	(Soils and Crops S2)	2	1	4
Farm Management and Accounts		3	1	5
Orchard and Vineyard Pruning	(Fruit Growing S3)	1	2	5
Farm Motors	(Agricultural Engineering S2)	—	3	6
Repair of Farm Equipment	(Agricultural Engineering S4)	1	2	5

Description of Courses

Fertilizers. — (Soils and Crops S2) This course deals with the storage and handling of manure and its use in crop production, with the selection and use of lime materials, and with the economical purchase and use of commercial fertilizers. The interpretation of fertilizer analysis and guarantee will be studied. Special attention will be given to the newer concentrated fertilizer materials and to those produced from atmospheric nitrogen. The laboratory work will give practice in identification of fertilizer materials, and in the calculation of fertilizer formulas and preparation of fertilizer mixtures.

2 class hours and 1 2-hour laboratory period a week.

Mr. C. H. Thayer

Principles of Feeding. (Animal Husbandry S-2) — A study of the fundamental principles of animal nutrition, of the composition of feeding materials and their relative importance for the different classes of farm animals in New England. The latter part of the course is devoted to a study of feeding standards and to the calculation of rations for all classes of farm live stock. Textbook: Henry and Morrison, "Feeds and Feeding."

5 class hours a week.

Assistant Professor G. V. Glatfelter

Farm Management and Accounts. — A brief study of some of the principles involved in the organization and successful management of a New England farm. Efficient use of land, labor, capital, and materials; farm layout; building arrangement; use of machinery and power; effect of size, diversity and production on income. Records of successful and unsuccessful farms will be studied. Some time will be devoted to a study of the necessary records and accounts.

3 class hours and 1 2-hour laboratory period a week.

Professor J. A. Foor

Fruit Growing. (Fruit Growing S-10). — This course is intended to meet the needs of students in the Animal Husbandry and Poultry majors who cannot devote more than one term to the subject of Pomology. It deals with the practical side of the growing and marketing of fruits. Special attention is given to such questions

as selection of site for plantation, choice of varieties, grafting and budding, spraying, pruning, cultivation and cover crops, fertilizing the fruit plantation, packing and marketing.

3 class hours and 2 2-hour laboratory periods a week.

Assistant Professor A. P. French

Orchard and Vineyard Pruning. (Fruit Growing S-3). — Fruit plantations may be damaged more by unintelligent pruning than by mismanagement in any other single operation. If the orchardist does not know that apple trees bear on spurs, he is likely to cut them off in pruning, and so reduce his chances for a crop. If he is ignorant of the fact that the peach bears on last year's wood, he may remove most of this wood, and incidentally most of his crop. This course aims to give the student a thorough training in the theory of pruning and the methods of bearing of the different fruits.

At the same time, every student is required to prune in the college orchards and vineyards until he becomes reasonably proficient with each kind of fruit.

1 class hour and 2 2-hour laboratory periods a week.

Mr. O. C. Roberts

Farm Motors. (Agricultural Engineering S-2). — This course deals with the gasoline engine as used for stationary work, automobiles and tractors. Instruction is given by means of lectures and textbooks, and by operating and repairing stationary engines, automobiles and tractors. Special attention is given to overhauling and repairing.

3 2-hour laboratory periods a week.

Assistant Professor W. H. Tague and Mr. George F. Pushee

Repair of Farm Equipment. (Agricultural Engineering S-4). The object of this course is to give practice in the handling of tools, which will help in the repair of farm machines and miscellaneous farm equipment. Practice is given in forging, pipe fitting, soldering, and the use of machinists' tools. Part of the course is given over to the study of water supply systems, electric motors and wiring.

1 class hour and 2 2-hour laboratory periods a week.

Mr. John B. Newlon

TEN WEEKS' WINTER COURSE IN POULTRY RAISING

January 3 to March 11, 1933.

General Information

The number of students will be limited to fifteen; unless six students have registered by December 24, 1932, the course will not be given. Applicants should register early as they will be accepted in the order of their application.

Aim. — The purpose of this course is to give the students a good survey of the entire field of poultry production and cover the work as intensively as time will permit. It is designed for those who wish to follow poultry keeping as a vocation and who can spend only one term for preparation.

Facilities. — Our large poultry plant of 2,000 birds equipped with modern incubators and brooders of various kinds, together with other adequate equipment and laboratories, will be at the service of students in carrying on their laboratory work.

The M. S. C. Poultry Club, a student organization, meets twice a month for special discussions on current topics and lectures by prominent poultrymen or specialists.

Description of Courses

Course I. Incubation, Brooding and Marketing. — This course considers practices in incubating and brooding chicks and the fundamental principles involved in these practices. It gives the student an opportunity to operate different types of incubators and brooders, to carry through a hatch to completion, to brood chicks and to ship day-old chicks.

The course also acquaints the students with the demands of eastern markets. It teaches them the practices which fit poultry products to meet these demands. Students become acquainted with methods of candling, grading and packing eggs.

Best methods of preparing poultry for market are considered and the students are given practice in selecting, killing and dressing for eastern markets.

3 class hours and 2 2-hour laboratory periods a week.

Mr. J. H. Vondell

Course II. Feeding and Culling. — This course embraces a study of the fundamental principles of nutrition, and their application to the problems of feeding the poultry flock — the most expensive item in operating a poultry enterprise. Feeding both the young and adult stock is included.

The work on culling includes a study of the factors effected by egg production, and those that limit egg production in the individual. Trapnested birds with known records are freely employed in the laboratory periods to constantly check the judgment of the student in estimating production. This study has direct applicability to the constant elimination of non-producers from the flock, and the selection of outstanding breeders.

3 class hours and 2 2-hour laboratory periods a week.

Assistant Professor Luther Banta

Course III. Poultry Breeding and Sanitation. — The first part of this course will consider practical methods of improving poultry by selective breeding. Students will participate in the selection of the breeders at the College Plant, and will follow the eggs from these breeders through the various steps in pedigreed hatching, and the off-spring through the various records of a simplified system of pedigreed record keeping. Those principles of heredity most applicable to the selection steps will be carefully studied.

The second part of the course will cover a disease-prevention program. Sufficient work in anatomy and in physiology will be studied to enable the students to distinguish between healthy and gross pathological conditions. The use of disinfectants and insecticides for maintaining clean quarters and birds will be considered. The increasing use of vaccines and blood testing will be stressed. The nature and course of the most common diseases will be related to the pathological symptoms and to clean-up and control methods. All will be summarized in the consideration of a general quarantine program as the most practical methods of preventing disease.

3 class hours and 2 2-hour laboratory periods a week.

Professor W. C. Sanctuary

Course IV. Poultry Housing Management and Farm Organization. This course covers the principles and practices of housing, based upon the biological needs of the domestic fowl. Such points as location, economic construction, ventilation, size of unit, and general flock management will receive special attention.

A study will be made of the modern trend of poultry farm organization from the commercial point of view. Each student will prepare a definite and detailed plan for the farm he hopes to develop later. Much of the work will center about this plan which will emphasize and correlate the work in breeding, incubation, brooding, growing, market egg and meat production, and marketing.

5 class hours a week.

Assistant Professor Luther Banta and Professor W. C. Sanctuary

WINTER COURSE FOR GREENKEEPERS

January 3 to March 15, 1933.

A specialized course for men engaged in the profession of greenkeeping, or members of green committees. This course has been arranged in cooperation with the New England Greenkeepers' Club, and the subjects as outlined can be effectively studied during the winter months.

General Requirements

An applicant for this school must be either a member of the greens committee, a greenkeeper, or must have had experience on a golf course, and the application blank must be countersigned by the greenkeeper and chairman of the green committee.

No entrance examinations are required, but it is expected that the student will have a reasonable education in the English language.

The number of students is limited.

The college reserves the right to reject any applicant obviously unqualified for the work, or to dismiss any student for misconduct, or failure to properly meet the requirements of the course.

The winter school certificate will be given only to those who complete the full course with credit.

Registration January 3. Classes begin January 4.

Courses Offered

<i>Course</i>	<i>Weekly Periods</i>	<i>Length of Course</i>
Landscape Appreciation	1 Lecture	Full Term
Botany	1 Laboratory, 2 Lectures	Full Term
Water Systems	2 Laboratories, 3 Lectures	Six Weeks
Drainage	2 Laboratories, 3 Lectures	Five Weeks
Equipment	3 Laboratories, 2 Lectures	Six Weeks
Managerial Problems	3 Laboratories, 2 Lectures	Five Weeks
Grasses and Grass Seeds	3 Laboratories, 2 Lectures	Six Weeks
Cost Keeping and Analysis	3 Laboratories, 2 Lectures	Five Weeks
Soils and Fertilizers	2 Laboratories, 2 Lectures	Full Term
Forum and special lecture hour daily during full term.		

Description of Courses

I. Water Systems. — A study of standard types of water systems, with particular reference to the relation of size of pipe, pressure and nozzles, to the flow and delivery of water.
Professor C. I. Gunness

II. Soils and Fertilizers (Special for greenkeepers). — Fundamental properties of soils and their management as related to golf green conditions will constitute the main part of the course. The study of fertilizers and their uses will be made as complete as possible. Individual problems and discussions will be given all the time and attention warranted.
Assistant Professor M. H. Cubbon

III. Equipment. — A study of the major equipment used on the golf course, with particular reference to mowers (fairway and putting green,) spraying equipment and compost mixers. A very thorough study of lawn mowers will be made in this course. All types of mowers are available for study. Minor equipment will also be discussed.
Assistant Professor L. S. Dickinson

IV. Managerial Problems. — This course uses for its laboratory a very large and complete model of a golf course, about which the many problems of a greenkeeper are discussed. The model is so complete that the discussion is practical and not of a theoretical nature.

For example: The economy of properly routing a fairway mower will be demonstrated.
Assistant Professor L. S. Dickinson

V. Grasses and Grass Seed. — This course will enable the student to identify the various grasses, also grasses and weed seeds usually found in seed mixtures. The relative germination of grass seeds will be demonstrated and applied to their uses for golf and tennis court purposes. The soil and fertilizer requirements of the various grasses will be discussed.
Assistant Professor L. S. Dickinson

VI. Drainage. — The entire problem of land drainage will be discussed and practical problems worked out. The student will be taught the use of the level and how to set ditch grades.
Assistant Professor M. J. Markuson

VII. Botany for the Greenkeeper. — Laboratory demonstration and lecture discussions dealing with the living plant and its parts and consideration of the work performed by each part.
Assistant Professor W. H. Davis

VIII. Cost Keeping and Analysis. — The value of cost keeping and its analysis will be demonstrated, and a method of cost keeping will be taught. The many factors that enter into the cost will be noted, analyzed and adapted to individual problems. The distribution and directing of the workmen will also be studied.

Assistant Professor L. S. Dickinson

IX. The lectures on landscape appreciation will be given by Professor Frank A. Waugh, Head of the Department of Landscape Architecture.

Forum and Special Lecture Hour. — One hour is set aside daily for a summarization of the preceding day's work, or for discussions with any visiting greenkeeper, green chairman, or for special lectures.

Assistant Professor L. S. Dickinson, Leader

WINTER SHORT COURSE IN DAIRY BACTERIOLOGY

(Methods for Testing Milk)

January 3 to January 14, 1933.

General Information

Each year numerous requests are received by this department for individual instruction in modern bacteriological methods for testing milk. The majority of these requests are due to the interest of the modern dairy man in the quality of his product, as expressed by results of chemical and bacteriological examinations and a desire to more accurately control production on the farm and in the dairy plant. A two weeks course on modern testing methods has been designed to meet the need of the dairy man who wishes to provide a means of making these bacteriological tests in his own plant laboratory.

Admission and Registration

There is no prerequisite for the course. Students must be at least eighteen years of age and must have completed the elementary or common schools.

Students should enroll by mail. See special application blank in front of announcement. Early registrations will be given preference.

Ten students will be the maximum number admitted to this course. Unless five students have registered prior to the opening day, the course will not be given.

Tuition, Fees and Expenses

There is a tuition fee of two dollars and each student is required to pay the Treasurer a registration fee of two dollars per course.

Description of the Course

Five afternoons each week will be devoted to laboratory discussions, demonstrations and manipulation of the Breed and Brew, Frost Micro Plate, Methylene Blue Reduction, Burri and Standard Plate Methods of examining milk. Each student will be given ample opportunity to perform these tests on numerous milk samples. Instruction will also be given in the correct use and care of the compound microscope.

Mornings may be spent in the department or college library where there are available numerous books and pamphlets on dairy bacteriology and the relationship of milk and milk products to the Public Health.

Information

For further information write to the Director of Short Courses, or to Professor Leon A. Bradley, Massachusetts State College, Amherst, Mass.

WINTER SHORT COURSES IN DAIRYING

January 16 to February 11, 1933.

The courses are intended not only for experienced milk plant, ice cream and creamery men, but for men who have little dairy experience, but with a desire for knowledge in the various dairy manufacturing fields. Those who are inexperienced should plan to take all four courses. Farm men and women, who are responsible for milk handling, butter making, or the making of soft cheese will find the first and second courses adapted to their needs.

There are no prerequisites for the courses. A certificate showing the subject studied is given at the end of each course to those doing satisfactory work.

Admission

There are no entrance requirements except that the student must be eighteen years of age and must have a common school education.

Registration

Students should enroll by mail. See application blank in front of announcement.

Enrolments for each of the four dairy courses described in the following paragraphs should be made at least three days prior to the beginning of the course. Those failing to enroll by mail may do so on arrival for the course. The work begins for each course on the afternoon of the opening day. Therefore, those enrolling should arrive early enough in the morning so that time is available for registering, securing accommodations, etc.

Early registrations are given preference. A maximum of 20 will be adhered to for all courses. Second courses will be given in case the number of registrants warrant it.

All applications for entrance to these courses should be addressed to the Director of Short Courses, Massachusetts State College, Amherst, Mass.

Upon arrival the students should report at the office of the Director of Short Courses in South College, for information concerning rooming accommodation and for registration.

Tuition, Fees and Expenses

There is a tuition fee of two dollars for each course, and each student is required to pay the Treasurer a registration fee of two dollars per course. These fees should be mailed with the application.

Students will need white suits for laboratory work, and may wish to purchase one or more textbooks for each course.

Board may be obtained at the college dining hall at \$6.00 a week or in private boarding houses from \$6.00 to \$7.00. Rent for furnished rooms in private houses varies from \$2.50 to \$5.00 a week for each occupant.

Description of Courses

Course I. Milk and Cream Testing; Analyzing and Inspecting Milk Products (January 16-21)

This course is designed to help men and women to become proficient in operating the Babcock test, acidity tests, use of the lactometer, the Methylene Blue test and Plate Counts, as well as other methods commonly used in testing, analyzing, and inspecting dairy products.

The course should be of special value to those interested in dairy inspection work, cow testing association positions, or laboratory control work which is essential in milk handling.

Opportunity is given during the course to secure the Massachusetts Babcock Testing certificate.

Course II. Milk Plant Operation and Manufacture of Surplus Milk Products (January 23-28)

This course should help milk plant and creamery employees to a better understanding of the essentials involved in the scientific handling of milk and creamery products.

Some of the lecture and discussion topics are: general scope of the market milk industry, value of milk as a food, relation of bacteria to milk, sanitary production, marketing, plant construction and selection of equipment, processing, delivery, handling surplus, standardizing, grading, and labeling, and care of milk in the home. Special attention will be given to economic methods of marketing surplus milk through cottage and other soft cheeses, and commercial buttermilk.

Laboratory exercises will cover milk sampling, the scoring of dairies, cream line problems, the scoring of milk, the study of milk plant equipment, milk processing, the manufacture of commercial buttermilk, of cottage, neufchatel, and cream cheese and butter.

Practical application of dairy tests and of lecture work will be carried out in the college creamery and dairy barn.

Course III. Ice Cream Making Course for Beginners (January 30-February 4)

This course is planned for those wishing to enter the ice cream business, but have had no previous experience along this line.

Lecture and laboratory work will cover the selection of ingredients for the ice cream mix, standardizing and calculating the mix, processing the mix, freezing and yield control, causes and remedies of ice cream defects, etc. Actual experience will be secured in making ice cream mixes and freezing work. Different kinds of ice cream will be made, as well as ices and sherbets. The handling of refrigeration machinery will be included in this course.

All those enrolled in this course should plan to stay over for the second week's work in ice cream making.

Course IV. Ice Cream Making Course for Experienced Men (February 6-11)

This course is designed for those who have had actual experience in ice cream making and wish to secure a more thorough knowledge of their work.

Lectures and laboratory work will cover a study of various factors affecting efficient freezing operations, the effect of variations in composition and manufacture on quality of the finished product, etc. Round table discussions of new methods and recent experimental work, as well as individual problems, will be included. Some specialists in the ice cream business and closely allied fields will speak before the group.

**APPLICATION FOR ENROLMENT
IN THE
TEN WEEKS' COURSE FOR GREENKEEPERS
January 3 to March 15, 1933.**

Date.....

Name.....

Home Address.....

Business Address.....

Age..... Present Occupation.....

Previous Schooling.....

I hereby certify that the above applicant for the Winter School Course for Greenkeepers is either, — (1) a member of the green committee, (2) a greenkeeper, or (3) an employee of this club.

Signed.....

Greenkeeper

Signed.....

Chairman of the Green Committee

Mail this blank to Roland H. Verbeck, *Director of Short Courses*, Massachusetts State College, Amherst, Mass.

**THE STOCKBRIDGE SCHOOL OF AGRICULTURE
A Two-Year Non-Degree Course in Vocational Agriculture.
Special Attention of Principals and Teachers.**

For fifteen years the Massachusetts State College in addition to its degree courses has been conducting non-degree courses for students who wish to get fundamental training for some agricultural business. More and more, high school graduates, not otherwise prepared for college entrance, whose inclinations are towards the practical field of agriculture are finding the work of this department of the College well suited to their needs.

It will help you in your vocational guidance work in high school to know fully what service we can render you and your students, through the Stockbridge School of Agriculture.

The work is divided into seven major programs — dairying, animal husbandry, poultry, floriculture, horticulture, pomology, and vegetable gardening, one of which is selected by the student, depending on the job for which he wishes to secure training.

No examinations are required. Minimum age seventeen years; minimum schooling eighth grade. Two hundred and forty-two students were enrolled in 1932. Ninety per cent are high school graduates.

The first year consists of six months' study at the College and six months of required agricultural placement training, under the supervision of the College. During the placement period the student is expected to learn much of the practical side of his particular vocation. He is recommended to a position. These positions are on farms, in dairies, greenhouses, poultry plants. The nature of the position depends on the student's particular objective.

The second year consists of eight months' study at the College. On the completion of the course a diploma is granted. Tuition is \$20.00 per term to residents of the Commonwealth. Term begins October 2, 1933.

THE CHURCH OF ENGLAND IN THE REIGN OF EDWARD THE FIRST

THE M. S. C. BULLETIN

AMHERST, MASSACHUSETTS

Volume XXIV

November, 1932

Number VIII

Published eight times a year by the Massachusetts State College; Jan., Feb.,
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The Graduate School Catalogue Number
For the Sessions of 1932-1933



MASSACHUSETTS STATE COLLEGE



THE GRADUATE SCHOOL CATALOGUE

This issue of The Bulletin contains the catalogue of the Graduate School for the sessions of 1932-33 which is part of the Sixty-ninth Annual Report of the Massachusetts State College and which in conjunction with the general catalogue of the College constitutes Part II of Public Document 31. (Sec. 8, Chapter 75 of the General Laws of Massachusetts.)



CALENDAR.

1933.

January 3, Tuesday, 8 A.M.	. . .	Winter term begins
February 22, Wednesday	. . .	Holiday, Washington's Birthda
March 18, Saturday	. . .	Winter term ends
March 27, Monday, 8 A.M.	. . .	Spring term begins
April 19, Wednesday	. . .	Holiday, Patriots' Day
May 30, Tuesday	. . .	Holiday, Memorial Day
June 2-5, Friday-Monday	. . .	Stockbridge School Commencement
June 9-12, Friday-Monday	. . .	Commencement
June 15-17, Thursday-Saturday	. . .	Entrance examinations
September 13-16, Wednesday-Saturday	. . .	Entrance examinations
September 18, Monday	. . .	First semester begins for Freshmen
September 20, Wednesday	. . .	First semester begins for Upper Classmen
October 2, Monday	. . .	First semester begins Stockbridge School
October 12, Thursday	. . .	Holiday, Columbus Day
November 11, Saturday	. . .	Holiday, Armistice Day
November 29-December 4, Wednesday		
12:30 M.-Monday, 8 A.M.	. . .	Thanksgiving Recess
December 20, Wednesday	. . .	Christmas Recess begins

1934.

January 2, Tuesday	. . .	Christmas Recess ends
February 3, Saturday	. . .	First semester ends
February 5, Monday	. . .	Second semester begins
February 22, Thursday	. . .	Holiday, Washington's Birthda
March 31, Saturday-April 9, Monday	. . .	Easter vacation
April 19, Thursday	. . .	Holiday, Patriots' Day
May 30, Wednesday	. . .	Holiday, Memorial Day
June 1-4, Friday-Monday	. . .	Stockbridge School Commencement
June 8-11, Friday-Monday	. . .	Commencement

THE TRUSTEES OF THE COLLEGE.

Organization of 1933.

MEMBERS OF THE BOARD.

	TERM EXPIRES
DAVIS R. DEWEY of Cambridge	1933
JOHN F. GANNON of Pittsfield	1933
GEORGE H. ELLIS of West Newton	1934
PHILIP F. WHITMORE of Sunderland	1934
JOHN CHANDLER of Sterling Junction	1935
FREDERICK D. GRIGGS of Springfield	1935
NATHANIEL I. BOWDITCH of Framingham	1936
HOWARD S. RUSSELL of Waltham	1936
MRS. JOSEPH S. LEACH of Walpole	1937
JAMES F. BACON of Boston	1937
FRANK GERRETT of Greenfield	1938
HAROLD L. FROST of Arlington	1938
CHARLES H. PRESTON of Danvers	1939
DAVID J. MALCOLM of Charlemont	1939

MEMBERS EX OFFICIO.

His Excellency The Governor, JOSEPH B. ELY of Westfield, *President of the Board of Trustees*
 HUGH P. BAKER, *President-elect of the College*
 PAYSON SMITH, *State Commissioner of Education*
 ARTHUR W. GILBERT, *State Commissioner of Agriculture*

OFFICERS OF THE TRUSTEES.

His Excellency The Governor, JOSEPH B. ELY of Westfield, *President*
 GEORGE H. ELLIS of West Newton, *Vice-President*
 ROBERT D. HAWLEY of Amherst, *Secretary*
 FRED C. KENNEY of Amherst, *Treasurer*
 FRANK GERRETT of Greenfield, *Auditor*

The Graduate School Staff.

HUGH P. BAKER, *President-elect of the College*
 FRED J. SIEVERS, *Director of the Graduate School*
 Dean of the College
 Heads of all Divisions
 Heads of Departments offering Graduate Courses
 Professors, Associate Professors and Assistant Professors teaching Graduate Subjects

GENERAL INFORMATION.

HISTORY.

The history of the Graduate School dates back almost to the establishment of the college. In 1876 post graduate courses leading to the degree of doctor of science were offered in botany by President Clark and in chemistry by Professor Goessmann. In 1892, under President Henry H. Goodell, graduate courses leading to the degree of master of science were offered in mathematics, physics, chemistry, agriculture, botany, entomology and veterinary. Horticulture was added to the list in 1894. In 1897, graduate courses with chemistry, botany and entomology as the major and minor studies were offered leading to the degree of doctor of philosophy. The first master of science degrees were conferred on two candidates in June of that year.

A fellowship under the title "instructor in chemistry" was offered in 1899 "to some recent graduate who desires, in connection with his regular duties as instructor, to carry on advanced work for one or more years."

The first doctor of philosophy degree granted by the Institution was conferred at commencement in June, 1902.

In response to the demand for a more complete organization of the Graduate School, the trustees, in June, 1908, appointed Dr. Charles H. Fernald, Professor of Zoölogy, as director. Professor Fernald had been closely identified with the work and development of the Graduate School during the entire time of his connection with the Institution—a period of twenty-two years. After his retirement, in June, 1910, the school was without a director for two years.

In 1912, Dr. Charles E. Marshall, Professor of Microbiology, was elected director, and under his administration new courses were made available. In 1915 the subjects available as majors for the degree of doctor of philosophy were botany, chemistry, entomology, horticulture, and microbiology. Those available as major subjects for the degree of master of science were agriculture, agricultural economics, agricultural education, botany, chemistry, entomology, horticulture, landscape gardening, mathematics and physics, microbiology, poultry science, rural sociology and zoölogy. The following year the Trustees voted to establish courses leading to the degrees of master of science and master of agriculture in agronomy and in animal husbandry.

Following the death of Dr. Marshall, which occurred on March 20, 1927, Dr. Henry T. Fernald, Professor of Entomology, was appointed as director, a position in which he served until June 30, 1930—the date of his resignation from the Institution.

Beginning with July 1, 1930, the responsibilities of administration of the Graduate School were combined with those of the Agricultural Experiment Station. This combination was considered expedient and advisable since both these units in the Institution deal with research. The new arrangement should prove mutually beneficial by making the staff and equipment of the Experiment Station available for service in the Graduate School, and by providing an opportunity for the Experiment Station to utilize the services of graduate students on its organized research projects.

LOCATION AND LANDS.

The Massachusetts State College is located in Amherst, a town of about six thousand people, overlooking one of the most picturesque sections of the Connecticut Valley. From the standpoint of teaching material in the field of science and agriculture, the location is ideal. Amherst is ninety-seven miles from Boston, fifty miles from Worcester, twenty-five miles from Springfield, eighteen miles from Greenfield and eight miles from Northampton. Busses and electric cars connect the town with Northampton, Greenfield, Holyoke and Springfield, or can be reached direct over the Central Vermont Railroad. The campus consists of a tract of approximately seven hundred acres, lying about a mile north of the village center. The College is well provided with modern buildings and equipment, description of which may be found in the general catalogue.

PURPOSE AND SCOPE OF THE GRADUATE SCHOOL.

The purpose of the Graduate School is to provide qualified students with proper guidance in the methods of advanced study and research. Courses leading to the degrees of doctor of philosophy, master of science, and master of landscape architecture are available. Students who desire advanced courses but who do not wish to become candidates for an advanced degree are also admitted.

DOCTOR OF PHILOSOPHY.

Candidates for the degree of doctor of philosophy are required to prosecute three subjects, one of which is designated as the major, and the others as minors. An original thesis is considered a part of the major subject. The degree is conferred upon graduate students who have met the following requirements:—

1. The devotion of at least three years to three subjects of study and research in residence at the College.
2. The earning of not less than one hundred credits of which not less than sixty-five shall be in the chief or major subject, and of not less than fifteen in each of two minor subjects.
3. The preparation of a satisfactory thesis.
4. The passing of final examinations, written and oral, in both the major and minor subjects.
5. The presentation of evidence of a working knowledge of both French and German.
6. The passing of a public oral examination.
7. The payment of all College fees and expenses.

It should be emphasized that the requirements for this degree are not computed primarily in terms of time and credits but that the degree is conferred only upon such students as have reached satisfactory attainment in some special branch of learning.

MASTER OF SCIENCE.

Candidates for the degree of master of science are required to prosecute two subjects, one of which is designated as major and the other as minor. When desirable and approved by the director, the minor may be made up of subjects from more than one department. An original thesis is considered a part of the major subject.

The degree is conferred upon graduate students who have met the following requirements:—

1. The devotion in residence of at least one year to two subjects of study and research.
2. The earning of not less than thirty-four credits of which approximately two thirds shall be in the major subject.
3. The preparation of a satisfactory thesis in the major subject.
4. The passing of final examinations written and oral in both major and minor subjects.
5. The payment of all College fees and expenses.

MASTER OF LANDSCAPE ARCHITECTURE.

Candidates for the degree of master of Landscape Architecture are expected to conform to the established courses as specified by the department of landscape architecture. The degree is conferred upon graduate students who have met the following requirements:—

1. Work covering at least three years, of which a minimum of one and one-half years must be devoted to study in residence, and one year spent in practice outside of the College, specific requirements concerning the nature of such practice to be laid down by the department.
2. Submission of a complete written report on the work done in practice outside of the College.

3. Written approval from the employer as to quality of service during the period devoted to practice outside of College.
4. The presentation of convincing evidence of genuine aptitude for some branch of landscape architecture as design, construction or management.
4. Completion of final examinations.
5. Payment of all College fees and expenses.

The degree of bachelor of landscape architecture may be earned upon the completion of one year of specialized work in that field.

NON-DEGREE ENROLLMENT.

Graduate work may be taken by students who are not candidates for a degree. Such enrollment permits the special privilege of a wider range in the selection of courses. The courses selected should, however, bear an appropriate relation to each other and be within the confines of the preparation of the student. A statement of the subjects chosen must in each case be submitted to the director of the Graduate School for approval.

GENERAL STATEMENT.

A working knowledge of French and German is considered important for successful graduate work in practically all the major lines and is required for the doctor of philosophy degree. Students not offering modern language for admission will be given an opportunity to acquire same along with their graduate work.

The graduate staff reserves the privilege of recommending and allowing course completed in other institutions as a part of the work for advanced degrees at this College, whenever such a policy seems advisable. A certain amount of work *in absentia* will also be permitted, provided it is prosecuted under satisfactory direction and supervision, and regular and sufficient reports of progress are submitted.

The courses as listed under departmental statements in the succeeding page constitute the principal and characteristic work of the graduate student.

The College reserves the right to make changes in the requirements for degree without notice.

ADMISSION.

Admission to the Graduate School will be granted:—

1. To graduates of the Massachusetts State College.
2. To graduates of other institutions of good standing who have received bachelor's degree substantially equivalent to that conferred by this College.

In case an applicant presents his diploma from an institution of accepted standing but has not taken as much of the subject he desires to select for his major study as is required of graduates of Massachusetts State College, he will be required to make up such parts of the undergraduate work in that department as the head of the department may consider necessary, without credit toward his advanced degree. In the case of minor subjects for advanced degrees, credit begins to accrue from the point where the previous training of the applicant ended, whether it be graduate or undergraduate in its rating at this College—subject, however, to such limitations as may be fixed by the department concerned.

Admission to the Graduate School is not to be interpreted as implying admission to candidacy for an advanced degree, for that is subject to specific requirements laid down by the departments in which the student selects his major and minor work.

THESIS.

A thesis is required of each candidate for an advanced degree. It must be on a topic belonging to the candidate's major subject, must indicate that its writer possesses the ability to carry on constructive study and that he has the imagination necessary for independent thinking.

The thesis in its final form, of which three copies are required, after receiving the approval of the thesis committee, must be submitted to the director by June 1 of the year in which the student is to present himself for the advanced degree, and before he may take the required final oral examination.

FINAL EXAMINATIONS.

For the degree of doctor of philosophy final examinations on the minors are given upon the completion of the subjects. In the major subject, a written examination, if successfully passed, is followed by an oral examination in the presence of the graduate staff.

For the degree of master of science, or master of landscape architecture, a final examination on the minor is given upon the completion of each course, and in the major a final examination, which may be written or oral, or both, is given by the department concerned.

COURSES OFFERED.

Courses available as major subjects for the degree of doctor of philosophy:—

Agricultural Economics.	Chemistry.
Agronomy.	Entomology.
Bacteriology.	Pomology.
Botany.	Sociology.

Courses available as major subjects for the degree of master of science:—

Agricultural Economics.	Education.
Animal Husbandry.	Entomology.
Agronomy.	Horticulture Manufacturers.
Bacteriology.	Pomology.
Botany.	Poultry Science.
Chemistry.	Sociology.
Dairy Industry.	

Courses available for the degree of master of landscape architecture:—

Landscape architecture.

Courses available as minor subjects:—

Agricultural Economics.	French.
Agronomy.	Geology.
Animal Husbandry.	German.
Bacteriology.	Horticultural Manufactures.
Botany.	Landscape Architecture.
Chemistry.	Mathematics.
Dairy Industry.	Physics.
Economics.	Physiology.
Education.	Pomology.
English.	Poultry Science.
Entomology.	Sociology.
Floriculture.	Veterinary Science.
Forestry.	Zoölogy.

ESTIMATE OF EXPENSES.

Massachusetts State College imposes a charge of \$38.25 per semester for resident students which covers tuition, laboratory and student health fees. For on-resident students this charge is \$98.25. Board should not be in excess of 9 per week with a minimum of about \$6. Rooms can be rented at from \$15 to 20 per month and the cost of books, fees and incidentals should not exceed \$100 per year. To this should be added the fee for the conferring of the degree, which is \$10 for the master's and \$25 for the doctor's.

GRADUATE COURSES DURING THE SUMMER.

The College offers opportunities to pursue graduate courses during the summer in connection with the regular Summer School. While provision may be made for special study with several departments during the summer period, the scheduled courses are offered primarily for teachers who seek advanced work in education and closely related subjects for purposes of better preparing themselves for more effective service in the teaching profession. Details regarding courses offered, facilities for study, environment, etc., may be found in the Summer School catalogue, a copy of which is available upon request to the director of Short Courses.

ASSISTANTSHIPS.

Through a fund set aside for that purpose, the College offers a number of graduate assistantships to students. The value of these is limited to \$600 per year, and appointment is made for a one-year period. These appointments are especially suited to students who desire to gain teaching experience and make themselves at least partly self-supporting while continuing their education. It should be recognized, however, that in cases where students render this part-time service in return for the financial assistance extended, the residence time requirements for the degree in question are necessarily longer. Application for appointment to any assistantship should be made to the director of the Graduate School.

FELLOWSHIPS.

The Agricultural Experiment Station in its program of investigation frequently finds it desirable to utilize the services of graduate students qualified to do certain types of technical work required in connection with its several research projects. Funds are available for this purpose and qualified students may be elected to such fellowships. Not infrequently this arrangement affords an opportunity for the student to satisfy his thesis requirement by completing some unit of work within the larger project organized in the Institution's research program.

In recent years industrial concerns have been rather anxious to have certain investigations undertaken for them by the Experiment Station. For this service they are willing to lend financial support, and in deserving cases it has proved very desirable to accept and utilize these funds for fellowship purposes. A present several fellowships are supported on this basis. These are proving very satisfactory from the standpoint both of the student and the industry supporting the investigation.

THESES.

1. The Graduate School expects and insists that all theses be meritorious. They should be worthy of publication as contributions from the department concerned; they should show evidence of an endeavor to make them real additions to knowledge and practice.

2. While it is true that time credit is granted for theses, it can be estimated only with difficulty, and therefore it is given in very restricted measure. The thesis itself, in its completed form, will be judged regardless of credit. Its value will be based largely upon the ability of the author to review literature and reach definite deductions; to formulate a problem, plan a method of attack, and work out a solution; and to summarize his material and draw conclusions. Scholarly attainment in writing and presenting the results of the study will also be an important factor in the evaluation of the thesis. No thesis markedly poor in English will be accepted.

3. After the student, in consultation with his major adviser (head of the department in which the student selects his major), decides upon a thesis subject, he is required to submit an outline to the director of the Graduate School. The director, with this outline as a basis, selects from the graduate staff a thesis committee. This committee will, thereafter, have direct charge of all matters pertaining to said thesis, and it is recommended that the student use the advice available from this source in the progress of his research. The thesis must have the approval of this committee before it is accepted as having fulfilled the requirements for it.

respective degree. After the committee has given its approval, arrangements are made for the final examinations for the degree.

4. Three complete, bound copies of the thesis including drawings and any other accessories, are required by the graduate school office to be placed in the hands of the director. One copy of the thesis will be retained for the director's use; one will be placed in the College library; and the third will be returned to the department in which the thesis was prepared.

5. If the thesis is printed, whether in periodical or book form, the fact that it is a thesis submitted for an advanced degree in this institution should, as a matter of courtesy, be explicitly stated in the title itself or as a footnote on the first page. Any modifications as may be deemed necessary for publication should have the approval of the director.

6. Because of the time required to give adequate consideration to the research conducted by the student, it is highly desirable that theses be submitted to the committee not later than March 15 in the case of doctors' theses, and not later than May 15 in the case of masters' theses of the academic year in which the candidates expect the conferring of said degrees. The theses in their final form must be deposited with the director by June 1. If they have not been submitted prior or before the above-named dates, the director and graduate staff cannot be held accountable for any failure to judge them.

7. If typewritten, whether designed for publication or to remain in the typewritten form, the size of the sheet, the arrangement of the title page, the general structure of the thesis, the character of the paper, and the binding must conform to definite standards.

Size of sheet. Size of sheet must measure 8½ x 11 inches.

Form of title page. The title page must be arranged in this order —

- a. Subject.
- b. Name of author.
- c. "Thesis submitted for degree of —."
- d. "Massachusetts State College, Amherst."
- e. Date.

and should be distributed over the page as artistically as possible.

Following the title page, the arrangement may take such form, variable of course with the subject matter, as is illustrated below:—

- a. An analytical outline of thesis.
- b. An introductory statement in which the purposes of the author are set forth.
- c. The body of the thesis composed of literature critically reviewed and deductions made, formulation of method of attack or procedure, and results secured. (All literature reviews and any work done by others should be so separated that no question can be raised as to which portion of the thesis represents the original investigation. It should be clearly kept in mind that *compilation* is not considered original investigation.)
- d. Summary and conclusions.
- e. Bibliography. (This should have the approval of the chairman of the thesis committee before final arrangement.)
- f. Acknowledgments.
- g. Statement of approval signed by members of the thesis committee.

Paper. See sample in director's office.

Binding. See sample of binding in director's office.

8. All theses are the property of the College and subject to the will of the rector of the Graduate School.

Agricultural Economics.

COURSES FOR MAJOR OR MINOR CREDIT

110. **I. ADVANCED ECONOMIC THEORY.**—A study of the classical and neo-classical theories of value and distribution. Analysis of fundamental concepts and the relation of these to the current problems of production, distribution and exchange. Credit, 3

Professor LINDSEY.

111. **THEORY OF AGRICULTURAL ECONOMICS.**—Readings in French, German and English on economics of agriculture. Alternate years, odd, 200 hours. Credit, 3

Professor CANCE.

112. **I. II. HISTORY OF ECONOMIC THOUGHT.**—A general study of the development of economic thought from its ancient beginnings; the contributions of the various schools; recent changes in economic theory. Credit, 2, per semester

Professor LINDSEY.

115-116. **CURRENT ECONOMIC PROBLEMS AND LITERATURE.**—Department seminar throughout the year. Credit, 1 each semester

120. **II. ECONOMIC HISTORY OF AGRICULTURE.**—This course deals with the factors influencing the development of agriculture; agricultural problems and proposed methods of solution. Credit, 2-

Assistant Professor JEFFERSON.

125-126. **APPLIED ECONOMICS.**—A course offered primarily for high school teachers, (others may elect) which is intended to appraise such current economic questions as the business cycle, taxation, banking, international trade, reparation, economic planning and similar problems in the light of economic principles. Credit, 2-

Miss FOLEY.

131. **I. PROBLEMS OF PRODUCTION.**—A presentation of the industrial relationships and the principles upon which the production of economic goods is based. May be taken in connection with Course 51. Credit, 3-

Professor CANCE.

140. **PRINCIPLES AND PROBLEMS OF LAND ECONOMICS.**—This course deals principally with the characteristics and classification of land, present and future uses of land, private property and the control over property, land income and the value of land. Credit, 2-

Professor ROZMAN.

145. **LABOR PROBLEMS.**—Reading and investigation. By arrangement. Credit, 1

Professor CANCE.

150. **AGRICULTURAL COMMERCE, INDUSTRY AND TRADE.**—A study of trade movements and commercial activities relating to agricultural products. By arrangement. Credit, 3-

Miss FOLEY.

155. **I. MARKETING AND MARKETING PROBLEMS.**—A study of the forces and conditions which determine prices and the mechanism, methods, and problems concerned with transporting, storing, and distributing goods. May be taken in connection with Course 53. Credit,

Professor CANCE.

156. **SPECIFIC PROBLEMS IN MARKETING FARM PRODUCTS.**—Reports and discussions. Alternate years, odd. Credit,

Professor CANCE.

161. **I. PRINCIPLES AND METHODS OF STATISTICS.**—Methods of collecting, analyzing, interpreting and presenting statistical information. The application

of statistical methods to the fields of agriculture, economics, education, business, and industry is emphasized through practical laboratory problems. Credit, 3.
Professor LINDSEY.

162. II. ADVANCED STATISTICS.—This course deals with the use of statistics in the analysis of economic data with special emphasis upon prices; the use of multiple correlation methods in the study and analysis of prices of agricultural and certain other commodities. Credit, 3.
Professor LINDSEY.

164. II. SPECIFIC PROBLEMS IN STATISTICS OF AGRICULTURE.—Application of statistical analysis to specific problems in agricultural production and prices. Even years. Credit, 3.
Professor LINDSEY.

166. II. PRINCIPLES OF TRANSPORTATION.—The development of highway, waterway, and railway transportation, and its relation to the development of the country; the principles governing the operation and control of transportation agencies; present-day problems. Lectures, text, and field work. Credit, 3.
Professor CANCE.

167. SPECIFIC TRANSPORTATION PROBLEMS.—Original study, reading, and reports on certain transportation problems related to agriculture. Alternate years, odd. Credit, 3-5.
Professor CANCE.

170. II. THE FUNDAMENTALS OF COÖPERATION.—History, principles, and business relations. (1) A Survey of the development, methods, and economic results of farmers' organizations and great coöperative movements; (2) the organization of producers and consumers abroad, and the present aspects and tendencies in the United States; (3) the principles underlying successful coöperative endeavor and practical working plans for co-operative associations. Credit, 3.
Professor CANCE.

171-172. SPECIAL PROBLEMS IN COÖPERATION FOR ECONOMIC PURPOSES.—Study, original investigation, and discussion. Every third year, beginning 1933. Credit, 3-5.
Professor CANCE.

174. II. ADVANCED BUSINESS ACCOUNTING.—This course covers the problems of corporation accounting and accounting for coöperative organizations. Considerable time is spent on problems in amortization, depreciation and the preparation, analysis and interpretation of financial statements. Credit, 3.
Professor LINDSEY.

175. II. AGRICULTURAL CREDIT AND THE ACQUISITION OF FARM LAND.—A study of the development, use, functions and operations of public and private credit institutions which are available for agricultural purposes. Special emphasis is given to the theory and use of credit. Credit, 3.
Professor LINDSEY.

185-186. ECONOMIC INSTITUTIONS AND PRACTICES IN RELATION TO THE STATE.—Studies in farm relief measures, taxation, bounties, subsidies, government control of commerce and industry. Credit, 2-5.
Professor CANCE.

190-195. INVESTIGATIONS IN VARIOUS PROBLEMS RELATED TO AGRICULTURAL ECONOMICS.—Credits to be determined by time spent and reports submitted.

200. THESIS.—Research work in agricultural economics will be developed by four principal methods; namely: historical, statistical, accounting, and general field investigation. In all instances mastery of research methods includes facility in investigation, tabulation, and interpretation of results.

COURSES FOR MINOR CREDIT ONLY.

35. I. ECONOMICS OF CONSUMPTION.—The purpose of this course is a consideration of the importance of consumption in modern industry and commerce.

It includes a study of the laws of consumption, standards of living, sources and factors determining family incomes, and of the administration of these incomes as shown by the expenditures of the nation and of various groups. The relation of consumption to the problems of population and to the development of society also studied. Lectures, assigned readings, and class discussions. Credit, 1 0.

Miss FOLEY.

84. II. RURAL AND BUSINESS LAW.—Land, titles, public roads, rights incident to ownership of livestock, contracts, commercial paper, and distinctions between personal and real property. Text, written exercises, lectures, and class discussions. Credit, 1 0.

Mr. SMART.

77. I. ECONOMICS OF FOREIGN TRADE.—A study of the principles and practice of international trade, including a survey of historical trends of the foreign trade of the United States, particularly with reference to agricultural products; the business methods of foreign traders, foreign exchange; and the efforts made by governments and business groups to influence foreign trade. Textbook, lectures, class discussions and class trip to Boston at an estimated expense of twelve to fifteen dollars. Credit, 1 0.

Miss FOLEY.

81. I. ELEMENTARY BUSINESS ACCOUNTING.—This course aims to give the student an elementary working knowledge of the principles underlying the accounting system in the gathering, analysis, and interpretation of accounting data and the methods used in accounting and preparing the usual types of business statements for individual proprietorship businesses and partnerships. The use of accounting records as a means of business control, which is emphasized in the course, should be of special value to those students who will later be employed in managerial capacities. Credit, 1 0.

Professor LINDSEY.

Agronomy.

COURSES FOR MAJOR OR MINOR CREDIT.

110. STUDIES IN THE CULTURE OF FIELD CROPS.—Laboratory, field, or other problems concerning the tillage of field crops. Credit, 1 0.

115. THE FERTILIZATION OF FIELD CROPS. Credit, 1 0.

120. STUDIES IN HARVESTING AND STORAGE.—Problems of method and time of harvesting and methods and conditions of storage, in relation to the keeping of field crops. Credit, 1 0.

125. THE IMPROVEMENT OF FIELD CROPS.—Readings, discussions, laboratory or field work in the improvement of field crops by breeding and selection. Credit, 1 0.

130. TECHNOLOGY OF FIELD CROPS.—The classification, grading, processing, and utilization of field crops. Credit, 1 0.

135. NUTRITION OF FIELD CROPS.—Readings, laboratory and greenhouse work on problems of nutrition. Credit, 1 0.

136. GRASSES.—Studies in the history, distribution, characteristics, commercial uses, and nutrition of grasses. Credit, 1 0.

137. FINE TURF CULTURE.—Laboratory and field studies in the establishment and culture of turf grasses. Credit, 1 0.

140. SOIL CLASSIFICATION.—Laboratory, field, and library studies of methods and the principal groups, series, and types of soils. Credit, 1 0.

145. STUDIES IN SOIL PHYSICS.—Problems concerning texture, structure, and other physical properties of soils. Credit, 1 0.

150. MOISTURE RELATIONSHIPS IN SOILS.—Readings and problems concerning the soil and moisture in their various relations. Credit, 1 0.

155. **STUDIES IN SOIL MANAGEMENT.**—Study of a wide range of problems arising in the management of soils for crop production. Credit, 1-10.
160. **SOIL TECHNOLOGY.**—Includes studies of properties, behavior, and technical utilization of soils. Credit, 1-10.
163. **CHEMISTRY OF THE SOIL.**—Includes chemical studies of availability of nutrients, base-exchange studies, etc. Credit, 1-10.
165. **SOIL REACTION STUDIES.**—Studies of hydrogen-ion concentration of soils as affected by natural agencies and conditions induced by practices of soil management. Credit, 1-10.
170. **STUDIES OF SOIL FERTILITY.**—Investigation of the factors and conditions affecting the productivity of soils. Credit, 1-10.
175. **ORGANIC MATTER OF THE SOIL.**—Includes studies of the origin, properties and methods of maintenance of soil organic matter, and its physical and biochemical relations to soil fertility. Credit, 1-10.
180. **FERTILIZER TECHNOLOGY.**—Studies of the properties and behavior of fertilizer materials when unmixed with the soil. Credit, 1-10.
185. **FERTILIZERS AND THE SOIL.**—Concerning the interrelationships of soils and fertilizers when mixed. Credit, 1-10.
190. **STUDIES IN LITERATURE.**—Practice in preparing abstracts and summaries of the literature bearing on selected topics. Credit, 1-10.
200. **THESIS.**—For students taking major work in Agronomy. Credit, 10-20.

Animal Husbandry.

COURSES FOR MAJOR OR MINOR CREDIT.

100. **ADVANCED BREED HISTORY.**—Special study of the genetic and historical foundations of any modern breed of livestock and its developmental trends, accomplishments, and present status. Credit, 10.
110. **NUTRITION OF FARM ANIMALS.**—An advanced course dealing with the nutritional physiology of animals and the chemistry of metabolism. Special emphasis is laid upon the rôle of proteins, minerals, and vitamins in the efficient production of animal products. Credit, 10.
120. **BREEDING OF FARM ANIMALS.**—An advanced course dealing with the physiology of reproduction in domestic animals and with the laws of inheritance as evidenced through the various systems of breeding. The working of Mendelian principles in domestic animals is carefully considered. Credit, 10.
200. **THESIS.**—Research work in Animal Husbandry may consist of historical studies of the modern breeds of livestock, experimental studies in animal nutrition and in breeding. Credit, 15-18.

COURSES FOR MINOR CREDIT ONLY.

50. **I. THE NUTRITION OF FARM ANIMALS.**—This course is planned to acquaint the student with the chemistry and physiology of digestion, assimilation and work, meat, wool or milk production. The feed requirements of the various classes of livestock in terms of energy, proteins, minerals and vitamins are ascertained, as well as the rôle of the various roughages, concentrate and by-product feeds in meeting these requirements. Credit, 3.
51. **THE BREEDING AND IMPROVEMENT OF FARM ANIMALS.**—This course is planned to acquaint the student with the facts of reproductive physiology, with the facts and theories of modern genetics and to show how such knowledge may be utilized for the creation of more beautiful and more efficient animal types. Credit, 3.

52. MEAT AND MEAT PRODUCTS.—This course deals with the manufacture of animals into their various commercial products and the distribution of these products to the consumer. Practice is given in the slaughtering of beef cattle, hogs, and sheep; judging of carcasses; cutting and curing of meats. The practical work is augmented by studies in the grading of fat stock, in packing-house methods, in the magnitude and trends of the meat industry, and in the opportunities of local New England marketing.

1 class hour.

1 4-hour laboratory period, credit, 1

53. BEEF AND SHEEP PRODUCTION.—Same as 75 below but applied to Beef Cattle and Sheep Production.

2 class hours.

1 2-hour laboratory period, credit, 1

75. HORSE AND SWINE PRODUCTION.—The purpose of this course is to see the solution of the various economic, nutritional, genetic and managerial problems concerned in the production of horses and swine. The student is called upon to utilize the scientific principles of feeding, breeding, etc., which he has mastered in his first three years of college work in solving the manifold problems concerned in successful livestock production.

2 class hours.

1 2-hour laboratory period, credit, 1

77. DAIRY CATTLE AND MILK PRODUCTION.—Same as 75 above but applied to Dairy Cattle and Milk Production.

2 class hours.

1 2-hour laboratory period, credit, 1

81-82. ANIMAL HUSBANDRY SEMINAR.—Students will prepare original papers and talks on various pertinent topics. Round table discussions of animal husbandry investigational work and practices will be conducted.

1 class hour.

Credit, 1

Bacteriology and Physiology

COURSES FOR MAJOR OR MINOR CREDIT.

100. HISTORY OF BACTERIOLOGY.—Studies in the development of bacteriology from the late seventeenth century to the present time, especially planned to show the developments of bacteriology in relation to agriculture, public health, the arts, industry, and medicine.

Credit, 1-

120. PHYSIOLOGY OF BACTERIA.—Lectures and laboratory on the nature of the bacterial cell and on nutrition and metabolism with emphasis on certain fundamental aspects of physiological processes and activities. Designed for students specializing in bacteriology and open to others who have sufficient chemistry, general biology, and botany.

Credit, 2-

130. SOIL BACTERIOLOGY.—Accurate applications of microchemical methods are demonstrated. Biochemical and biophysical methods for measuring the physiological activities of soil microorganisms are studied. Nitrification, denitrification, and ammonification will be discussed in relation to their influence on soil fertility.

Credit, 5-

140. DAIRY BACTERIOLOGY.—Technical procedures used in establishing sanitation in relation to milk production and supply will be discussed. Modern methods involved in the preparation, control, and preservation of milk and dairy products are studied.

Credit, 5-

150. FOOD BACTERIOLOGY.—Principles of food preservation and conservation, the application of scientific methods to the understanding of food fermentation and spoilage will be considered. This is arranged primarily for students with an excellent background in both chemistry and bacteriology.

Credit, 5-

160. HYGIENIC BACTERIOLOGY.—Special consideration given to organization of disease control campaigns, laboratory management, the relationship of serology, immunology, and bacteriology to municipal, rural, and community health. Bacteriological, immunological, and serological procedures will be presented, and there will be discussion of problems showing their use for improving the conditions and environment for human and animal life.

Credit, 5-

170. **PHYSIOLOGY, HUMAN OR ANIMAL.**—Study of the physiology of the circulation with special reference to intermediate metabolism; to be followed by a course on the physiology of excretion. This course in physiology may be considered from the standpoint of human or animal physiology, according as the student may elect. Credit, 6-10.

190. **LECTURES AND STUDY OF LITERATURE.**

Credit, 1 each term.

200. **THESIS.**—Some bacteriological problem related to agriculture, food, or public health. Distributed as may be most beneficial for research work. Time and credit by arrangement. Credit, 15-30.

COURSES FOR MINOR CREDIT ONLY.

BACTERIOLOGY.

31. **INTRODUCTORY AND GENERAL BACTERIOLOGY.**—Designed to make microorganisms real and significant. The laboratory covers the use and proper care of the compound microscope, the preparation of culture media, methods of sterilizing equipment, the isolation and handling of pure cultures, simple and differential staining, studies on classification and cultural and biochemical studies on type species of pathogenic and non-pathogenic bacteria. Individual practice in the isolation and identification of bacterial forms is a required part of the laboratory assignment. The course aims to provide a basis for bacteriological study and interpretation and to furnish such material as will be valuable in understanding agriculture, domestic science, and public health problems. First term. 2 3-hour laboratory periods, credit, 3.

52. **ADVANCED BACTERIOLOGY.**—A continuation of Course 31. The identification and differentiation of bacterial species by morphological, cultural, physiological and serological studies. The combined courses give to the student not only a comprehensive picture of various forms of existing bacteria but develop a specialized technique for their cultivation, isolation, and identification. Second Term.

Prerequisite, Bacteriology 31.

2 3-hour laboratory periods, credit, 3.

61. **BACTERIOLOGY. (PUBLIC HEALTH.)**—Considers the relation of the human body to its environment in the maintenance of health and the production of disease. The administration and organization of community health, the prevention or control of animal or human diseases of public health significance, are considered. A study of special community health problems and the relationship of these problems to social welfare is discussed. First semester.

2 class hours.

Credit, 2.

62. **BACTERIOLOGY. ((PUBLIC HEALTH.))**—Sanitation and its relation to agriculture, industry and public health. The microbiological features of air, water, soil, sewage, and refuse; industrial hygiene and the control of municipal and rural sanitary projects are considered. Second semester.

2 class hours.

Credit, 2.

Prerequisite, Bacteriology 31 or 61.

81-82. **APPLIED BACTERIOLOGY.**—These two courses covering a full year's work are designed to give the student a working knowledge of present day applied bacteriology. The work in the laboratory is presented in three distinct sections: (1) soil, (2) food, and (3) dairy. In soil, such subjects as the number and development of microorganisms in different soils, factors influencing their growth and activity, and changes wrought upon matter in the production of soil fertility, ammonification, nitrification, etc., receive attention. In food, a study of preservation, fermentation, spoilage, and methods of sanitary examination are considered. In dairy, emphasis is placed upon modern methods for examining the sanitary quality of milk and milk products. Groups of bacteria normally present, abnormal and normal fermentations, effect of temperature, and the rôle of milk in the transmission of disease, are some of the subjects receiving special consideration. First semester, 81. Second semester, 82.

Prerequisite, Bacteriology 31.

2 3-hour laboratory periods, credit, 3.

85. BACTERIOLOGY. (SEROLOGY.)—This course aims to supplement Bacteriology 52 and is planned to complete work essential for the advanced study in bacteriology and physiological science. This course includes the study, preparation, and standardization of such biological products as antigens, agglutinins, precipitins, hemolysins and complement-fixation bodies, and the use of the same in differential bacteriology and disease diagnoses. Consideration is also given to isohemagglutinins and their relation to human blood groups. Class limited to ten students. First semester.
Prerequisite, Bacteriology 52. 2 3-hour laboratory periods, credit, 3.

PHYSIOLOGY.

75. PHYSIOLOGY.—The object of this course is to establish a broad basis for physiological study. The study and use of instruments is emphasized. The correlation of physics, chemistry and biological science to the interpretation of functional activities is particularly considered. Aspects of nerve-muscle physiology, hemodynamics, alimentation, intermediate metabolism, and the general plan and structure of the body pertaining to each division of the work will be considered. First semester.
2 class hours. 1 2-hour laboratory period, credit, 3

76. PHYSIOLOGY.—Physiology of internal and external respiration including studies on calorimetry and basal metabolism. This will be followed by work upon the physiology of excretion. An introduction to the physiology of the special senses will be presented. This course is especially planned for students with a broad training in biological subjects. Second semester.
2 class hours. 1 2-hour laboratory period, credit, 3.
Prerequisite, Physiology 75.

Botany.

COURSES FOR MAJOR OR MINOR CREDIT.

100. PLANT PHYSIOLOGY.—The lectures will consider, under the nutrition of the plant: its chemical structure, absorption of various nutrient substances and their changes in the plant, assimilation and dissimilation of carbon and nitrogen by autotrophic and heterotrophic plants; under changes in the form of plants: growth and form under constant external factors, the influence of variable external and inner factors on growth, form, and development; and under plant movements: the various tropisms, mutations, etc. Supplemental demonstrations, laboratory work, and reading. One lecture a week for 2 semesters. Credit, 2.

101. PLANT PATHOLOGY.—A general consideration of the history, nature, and causes of plant disease; parasitism, predisposition, immunity, degeneration, natural and artificial infection, dissemination, epidemics, biologic strains, monstrosities and malformations, proliferation, prevention and control, economics of plant diseases. Supplemental reading and reports. One lecture a week for 2 semesters. Credit, 2.

102. PLANT INHERITANCE.—This course is planned to give the student a comprehensive understanding of the principles and facts of plant inheritance. A study is made of plant variations, Mendel's law of heredity, the physical basis of heredity as established by chromosome behavior, pure lines, mutations, species, graft hybrids, etc. One lecture a week for one semester. Credit, 1.

103. BIOLOGIC RELATIONS.—Consideration of certain phases of the morphological and physiological adaptations of plants with regard to insect visits; the rôle of thorns, hairs, tendrils, glands, etc. One lecture a week for one term. Credit, 1.

105. PHYSIOLOGICAL PLANT PATHOLOGY.—This course considers those plant diseases not due to bacterial or fungous parasites, but resulting from unfavorable physical or chemical conditions of the soil; from harmful atmospheric influences, such as dry air, excessive moisture, hail, wind, lightning, frost; from injurious gases and liquids; from lack of or too much light; from wounds. A knowledge of

the normal physiology of the plant is required. Demonstrations and assigned readings. One lecture a week for one semester. Credit, 1

106. HISTORY OF BOTANY.—An historical survey of the science; lives of noted botanists; history of certain culture plants, such as wheat, corn, coffee, potato, rice, and their influence on civilization; reading. By arrangement. Credit, 2.

107. METHODS IN DRAWING AND PHOTOGRAPHING FOR THESIS AND PUBLICATION.—One semester. Credit, 1-2.

110. SYSTEMATIC MYCOLOGY.—Morphology and development of typical species representing the orders and families of fungi; practice in identification, collection and preservation of fungi; systems of classification; collateral reading. 1 class hour, 2 2-hour laboratory periods, one, or two semesters, credit, 3-6.

111. ADVANCED PLANT PHYSIOLOGY.—The work offered in this course is arranged to meet individual needs. Botany 77-78 or their equivalent are prerequisite. Credit, 5-15.

112. ADVANCED PLANT PATHOLOGY.—The work offered in this course is arranged to meet individual needs. Botany 75-76 or their equivalent are prerequisite. Credit, 5-15.

190. COLLATERAL READING.—Extensive reading of botanical literature in English, German and French, designed to give the student a broad knowledge of the science, is required of all major students. Final examinations are based in part upon this reading course. Credit, 5-10.

200. THESIS.—Each major student is required to select a problem in plant pathology or physiology (in other branches at the discretion of the department) for original investigation, and the thesis must embody a distinct contribution to knowledge. The thesis work counts for not more than 50 per cent of the total number of major credits required for either degree.

COURSES PRIMARILY FOR MINOR CREDIT.

57. MICROTECHNIQUE.—A course in the preparation of microscopic mounts including the celloidin and paraffin methods and involving the use of microtomes and of differential stains.

2 2-hour laboratory periods, for one semester, credit, 2.

59-60. SYSTEMATIC BOTANY OF THE HIGHER PLANTS.—Study of gymnosperms and angiosperms. Lectures deal with the interrelations of the flowering plants and with their ecology, distribution, and economic importance. Laboratory work consists of a critical study of types from the most important natural plant families. Particular emphasis is laid on the flora of Massachusetts. The department herbarium and greenhouses supply material of important tropical forms for study. 2 class hours.

1 2-hour laboratory period, for two semesters, credit, 6.

61-62. THE COMPARATIVE ANATOMY OF GREEN PLANTS.—In the lectures study is directed to the comparative anatomy of green plants from the evolutionary standpoint. Particular emphasis is laid upon the woody forms both living and extinct. Of the latter, the department is fortunate in possessing excellent sets of micro-preparations and lantern slides.

2 class hours. 1 2-hour laboratory period, for two semesters, credit, 6.

75-76. PLANT PATHOLOGY.—Comprehensive study of diseases of plants; training in laboratory methods and technique, including culture work and artificial inoculation of hosts; miscellaneous diagnosis; study of literature and representative life histories of pathogens. Prepares for civil service, experiment station, and college work.

1 class hour. 4 2-hour laboratory periods, for two semesters, credit, 10.

77-78. PLANT PHYSIOLOGY.—Study of the factors and conditions of (a) plant nutrition, including the taking up of water and mineral substances, the assimilation of carbon and nitrogen, and the release of energy due to the processes of dissimilation; (b) plant growth, including the influence of internal and external factors on growth, the development of reproductive and vegetative organs;

(c) plant movements, including those due to the taking up of water, and those of both motile and fixed forms in response to external stimuli. Weekly conferences are held, at which students report on assignments to original sources in the literature.

2 class hours.

3 2-hour laboratory periods, for two semesters, credit, 10.

81. PLANT ECOLOGY.—Study of plants in relation to their environment, with special emphasis on the newer field studies, which have given increasing insight into the physical and chemical factors as they influence growth and development in the field and the adaptability of plants to changes in their normal environment. The various types of plant formations and successions are studied, as well as the mutual and antagonistic relations of certain plants.

1 class hour.

1 2-hour laboratory period, for one semester, credit, 2.

Chemistry.

COURSES FOR MAJOR OR MINOR CREDIT.

101. INORGANIC PREPARATIONS.—Laboratory. The preparation of chemical products from raw materials. The manufacture and testing of pure chemicals. The laboratory work is essentially synthetic in nature, and is designed to aid in acquiring a more adequate knowledge of inorganic chemistry than is to be obtained by chemical analysis alone. Either semester.

Credit, 5.

Assistant Professor SEREX.

103. ADVANCED ANALYTICAL CHEMISTRY.—Laboratory. This course may be taken in part as follows: (a) electrolytic analysis; (b) ultimate analysis; (c) special analytical work to meet the needs of the individual student. In addition the following subjects may be taken, if desired: (d) fertilizers; (e) insecticides; (f) food analysis. Either semester.

Credit, 5.

Professor PETERS.

104. ADVANCED PHYSICAL CHEMISTRY.—Laboratory. Measurement of the electrical conductivity of solutions; degree of ionization; ionization constants; per cent hydrolysis of aniline hydrochloride from conductivity measurements; solubility product by the conductivity method; velocity of saponification by conductivity; neutralization point by conductivity; vapor pressure determinations; transport numbers; preparation and properties of colloidal solutions; transition points by dilatometric method; heat of solution of ammonium chloride and potassium nitrate; absorption of iodine by charcoal; determination of hydrogen ion concentration. To each student separate work will be assigned. Either semester.

Credit, 5.

Assistant Professor SEREX.

105. ADVANCED ORGANIC CHEMISTRY.—Laboratory. The preparation of compounds not included in Courses 51, 52, such as the Kolbe synthesis of salicylic acid; benzaphenone and Beckmann's rearrangement; rosaniline, malachite green, Congo red, indigo, and other dyes; synthesis of fructose; Grignard reaction. To each student separate work will be assigned. Either semester.

Credit, 5.

Professor CHAMBERLAIN.

106. ADVANCED PHYSIOLOGICAL AND FOOD CHEMISTRY.—Laboratory. An intensive study of some of the more important physiological processes, physiological compounds, or food ingredients. Studies of milk, blood, urine, or other physiological factors under various metabolic and pathologic conditions. To each student separate work will be assigned. Either semester.

Credit, 5.

Mr. PARROTT.

109. ANALYTICAL CHEMISTRY.—Lectures. A general survey of the analytical processes and the theory underlying.

Credit, 1.

Professor PETERS.

110. ORGANIC CHEMISTRY.—Lectures. Some of the following topics will be considered both theoretically and industrially; alkaloids, synthetic dyes, essen-

ial oils, terpenes, rubber, cellulose; the study of methods for carrying out general reactions; isomerism, tautomerism, condensation, etc. Credit, 1.

Professor CHAMBERLAIN.

111. **PHYSIOLOGICAL AND FOOD CHEMISTRY.**—Lectures. A study of the recent advances in this field. An intimate treatment of the more important physiological factors and their relations to health, nutrition, and growth. Credit, 1.

Mr. PARROTT.

112. **PHYSICAL CHEMISTRY.**—Lectures. A general outline of special topics selected from recent publications covering theoretical and physical chemistry. Credit, 1.

Assistant Professor SEREX.

113. **INORGANIC CHEMISTRY.**—Lectures. A study of the fundamental theories of inorganic chemistry. Recent advances in this field will be emphasized. Credit, 1.

Assistant Professor FESSENDEN.

114. **SEMINAR.**—Conferences, reports, or lectures. Each semester, once a week. Credit, 1.

Professor CHAMBERLAIN.

115. **PHYSICAL CHEMISTRY.**—Lectures and laboratory work. First semester. Credit, 5.

Assistant Professor SEREX.

180. **PHYSIOLOGICAL CHEMISTRY.**—Lectures and laboratory work. First semester. Credit, 5.

Mr. PARROTT.

186. **THEORETICAL CHEMISTRY.**—3 lecture hours. Second semester.

Credit, 2.

Professor PETERS.

187. **HISTORY OF CHEMISTRY.** Second semester. class hours.

Credit, 2.

Professor CHAMBERLAIN.

200. **THESIS.**—Research, and, in the case of a degree, the preparation of an acceptable thesis in agricultural, analytical, organic, physiological, or physical chemistry, under the direction of the professor in charge of the work. Credit determined by work done.

COURSES FOR MINOR CREDIT ONLY:

51, 52. **ORGANIC CHEMISTRY.**—Lectures and laboratory work. A year course. credits each semester.

Professor CHAMBERLAIN.

61, 62. **QUANTITATIVE ANALYSIS.**—Lectures and laboratory work. A year course. 5 credits each semester.

Professor PETERS.

Dairy Industry.

COURSES FOR MAJOR OR MINOR CREDIT.

101. **HISTORY AND DEVELOPMENT OF DAIRYING.**—A review of the early history of dairying and factors in the industry contributing to its present development. Credit, 3-10.

102. **ICE CREAM PROBLEMS.**—A study of existing scientific, technical, and marketing problems in the field of ice cream making. Credit, 2-10.

103. **MARKET MILK PROBLEMS.**—Consideration of production, processing, and distribution of milk, the nutritional value of milk, chemical and bacteriological aspects of milk handling. Credit, 2-8.

104. **SURPLUS MILK PROBLEMS.**—The economical disposal of seasonal surpluses through cheeses, butter, milk drinks, etc. Credit, 2-8.

105. DAIRY PLANT MANAGEMENT.—The selection, construction, and arrangement of dairies and dairy machinery, and economical operation of same.

Credit, 2-8

195. SEMINAR.

Credit, 1-2

196. SEMINAR.

Credit, 1-2

200. THESIS.—Original research work having a bearing on some important problem in dairying.

Credit, 15-18

COURSES FOR MINOR CREDIT ONLY.

53. MARKET MILK. A study of the various phases of the market milk industry: sanitary production, transportation, pasteurization and handling in the city plant, marketing, delivery systems, milk and its relation to public health inspection, milk laws, food value, and advertising. Cultured milk and other milk drinks also are included. Some milk plants are visited.

Credit, 4

76. BUTTER AND CHEESE MAKING.—The first half of the semester is devoted to butter making, the remainder to cheese making, condensed and powdered milks. The various phases of the butter industry studied are: separators and cream separation; pasteurization, neutralization, and ripening of cream, preparation of starter cultures; churning, marketing, and scoring of butter; creamer management. The work in cheese making includes cheddar, cream, neufchâtel, cottage, processed cheeses, etc. The manufacture of condensed and powdered milk, and commercial casein is also covered.

Credit, 4

78. DAIRY CHEMISTRY.—The various physical and chemical properties of milk, milk products, and their components are studied. Testing and control methods commonly used commercially for milk and dairy products are included: moisture and fat determinations, casein, salt, and acid tests, work with the Mojonnier apparatus, and other applied chemical tests are taken up in the laboratory.

Credit, 4

79. ICE CREAM MAKING.—The course includes a study of the principles and practices of ice cream making. The effects of such factors as composition, quality, pasteurization, homogenization, aging, and freezing on the finished product are considered. Sherbets, ices, fancy and individual forms, and a variety of flavors of ice cream are studied. Some time is devoted to refrigeration machinery, delivery equipment, and merchandizing methods as they are related to the industry.

Credit, 4

80. SEMINAR.—The course consists of a study of research done by the experiment stations, also a review of foreign literature. Students prepare papers on timely dairy subjects. Frequent addresses are made to the class by visiting authorities in dairying.

Credit, 4

81. SEMINAR.—Continuation of above.

Credit, 4

Education

COURSES FOR MAJOR AND MINOR CREDITS WITH MAJOR ENROLLMENT IN EITHER GROUP OF SUBJECTS.

Education.

Courses for satisfaction of a minor may be selected from the undergraduate list in the annual college catalogue, except those numbered 51 and 65, provided prerequisites have been satisfied.

102. I. THE DEVELOPMENT OF PUBLIC EDUCATION IN MASSACHUSETTS. The origin and growth of all types of education under public control from early colonial days to the present, with legislation, policies and persons involved.

Credit, 4

By arrangement.
Professor WELLES.

103. PROBLEMS IN VOCATIONAL TEACHING.—The course deals with problems out of the experiences of vocational teachers in Massachusetts. Constructive assignments bearing upon individual experiences are worked out in harmony with the campaigns for better teaching in vocational schools. Credit, 2.

By arrangement.

Assisted by F. E. HEALD of Vocational Division, State Department of Education.

104. PRINCIPLES OF VOCATIONAL EDUCATION.—A survey of the objectives, history and legal requirements of vocational education in the United States. Credit, 2.

By arrangement.

Assisted by F. E. HEALD of Vocational Division, State Department of Education.

105. II. ORGANIZATION AND ADMINISTRATION OF PUBLIC EDUCATION.—This is a study of all phases of public school work from the side of the administrator—principal or superintendent. Credit, 2.
Given 1931–32 and alternate years.

Professor WELLES.

110. I. CONTEMPORARY EDUCATION.—Comparative studies of education involving European and United States systems. Credit 2.
Given 1932–33 and alternate years.

Professor WELLES.

137. II. SOCIALIZED EDUCATION.—Discussion of the objectives and the various factors involved in a system of education for increasing its social values. A view of education that tries to escape the effects of present idea of individualism. Credit, 2.
Given 1932–33 and alternate years.

Professor WELLES.

145. II. CONFLICTING PRINCIPLES IN TEACHING.—A critical analysis of many dualisms in teaching principles in which there is an apparent conflict between two sound ones and an attempt to find the best way to capitalize the good of both. Credit, 2.

By arrangement.

Professor WELLES.

168. I. HISTORY OF EDUCATION.—A survey of educational objectives and practices extending from early times to the present, emphasizing those movements that have most definitely influenced contemporaneous education in many countries. Credit, 2.
Given 1932–33 and alternate years.

Professor WELLES.

178. AGRICULTURAL EDUCATION.—An opportunity offered occasionally to study this type of vocational education by participating in it. The work is that of an assistant teacher under supervision with a schedule of classes to teach and a prescribed line of study to complete.

Credit, 1–3

By arrangement.

Assisted by F. E. HEALD of the Vocational Division, State Department of Education.

183. SEMINAR IN EDUCATION.—Content determined on basis of experience and needs of students. Designed to cover important phases of school work not fully treated in listed courses. Examples: classroom management, supervision, general and special curriculum studies, special subject methods, school finances, school housing, secondary education, etc. Credit, 1–5.

By arrangement.

Professor WELLES.

184. PROBLEMS IN SECONDARY EDUCATION.—A series of problems covering the important phases of secondary education to be worked out by study of a

high school in action. Assigned readings are given to aid in the solution of the problems.

Credit, 2
By arrangement.
Professor WELLES.

200. THESIS.—A completed piece of work on an accepted educational problem with necessary review of literature in its field. Required of all students for the advanced degree.

Credit, 5-12
By arrangement.
Professor WELLES.

Psychology and Philosophy.

152. EXPERIMENTAL PSYCHOLOGY.—A survey of important experiments in psychology. Special attention will be given to the techniques of experimentation and to the apparatus employed. The content of the course will be determined partly by the interests of the members of the class.

Credit, 2
By arrangement.
Professor DESILVA.

153. I. PSYCHOLOGICAL SYSTEMS AND FIELDS.—A survey of the history of psychology with special emphasis upon the present status of the fields and schools of psychology. The principle methods of psychological research are outlined.

Credit, 2
Professor DESILVA.

154. I. EDUCATIONAL PSYCHOLOGY.—The course deals with the psychological facts and principles which are involved in the solution of various educational problems. An attempt is made to criticize and evaluate educational theory and practice and suggest methods for improvement.

Credit, 2
Professor GLICK.

155. THE PSYCHOLOGY OF THINKING.—A consideration of the experimental work upon the higher thought processes, such as problem solving and creative imagination.

Credit, 2
By arrangement.
Professor DESILVA.

161. I. HISTORY OF PHILOSOPHY.—A study of the development of Western thought in general from the time of the early Greeks up to the recent past.

Credit, 2
Professor GLICK.

162. II. CONTEMPORARY PHILOSOPHY.—A study of the various current types of philosophy with emphasis upon evaluation and criticism.

Credit, 2
Professor GLICK.

163. II. PHILOSOPHY OF EDUCATION.—A criticism and evaluation of the various theories and practices in education viewed in the light of historical perspective and present-day science and theory.

Credit, 2
Professor GLICK.

185. II. ABNORMAL PSYCHOLOGY.—A study of the different types of disorders in human behavior relative to causes, classification, prevention, and treatment. A critical study is made of the various theories and practices of mental hygiene and psychiatry.

Credit, 2
Professor DESILVA.

186. II. APPLIED PSYCHOLOGY.—A study of the various applications of psychology in business, medicine, law, etc.

Credit, 2
Professor DESILVA.

188. ETHICS.—A critical study of the fundamental ethical theories and practices both of the past and present, with an attempt to evaluate each in the light of present knowledge and social demands.

Credit, 2
By arrangement.
Professor GLICK.

189. **I. MENTAL TESTS.**—The history and theory of mental tests; principles of construction and administration; uses in education, industry, and the professions. Credit, 2.

By arrangement.
Professor GLICK.

191. **RESEARCH AND STATISTICS.**—The principles and methods of research with special emphasis upon the technique used in psychology and education. Statistics are studied both from the standpoint of theory and application. Credit, 2.

By arrangement.
Professor GLICK.

193. **GUIDANCE.**—A study of individual differences in regard to aptitudes and interests with the view of guiding children into activities where they will be most efficient and contented. A study is made of the psychological devices used in measuring aptitudes and interests. Credit, 2.

By arrangement.
Professor GLICK.

194. **LOGIC.**—A study of the laws and theories pertaining to the principles and methods of correct thinking. Credit, 2.

By arrangement.
Professor GLICK.

196. **SEMINAR IN PSYCHOLOGY.**—Arranged to include phases of psychology not covered in the outlined courses and also to provide opportunity for greater specialization than the outlined courses may afford. Credit, 2.

By arrangement.
Professor DESILVA.

197. **SEMINAR IN PHILOSOPHY.**—Arranged to include phases of philosophy not covered in the outlined courses and also to provide opportunity for greater specialization than the outlined courses may afford. Credit, 2.

By arrangement.
Professor GLICK.

200. **THESIS.**—In either psychology or philosophy. Credit, 5-12.
Professors DESILVA and GLICK.

Entomology, Zoology and Geology.

COURSES FOR MAJOR OR MINOR CREDIT.

Entomology.

(As these courses vary from a few exercises only to half a year or more, no fixed number of credits can be assigned to them.)

MORPHOLOGY.—101-120.

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| 101. Embryonic development of insects and polyembryony. | Professor CRAMPTON. |
| 102. Metamorphosis and its interpretations. | Professor CRAMPTON. |
| 103. Advanced external and internal anatomy. | Professor CRAMPTON. |
| 104. Insect histology and physiology. | Professor CRAMPTON. |
| 105. Ancestry and development of insects, including fossil forms. | Professor CRAMPTON. |
| 106. Hermaphroditism in insects. | Professor ALEXANDER. |
| 107. Hybrids. | Professor CRAMPTON. |

108. Parthenogenesis, pedogenesis, and heterogeny. Professor CRAMPTON.
109. Chemistry and physics of insect colors. Assistant Professor SWEETMAN.
110. Color patterns, their significance and value. Assistant Professor SWEETMAN.
111. Luminosity. Assistant Professor SWEETMAN.
112. Insect teratology. Professor ALEXANDER.
113. Variation in insects. Professor ALEXANDER.
- ECOLOGY.—121-140.
121. Dimorphism and polymorphism. Professor ALEXANDER.
122. Mimicry, including concealment, protective devices, and warning coloration. Professor CRAMPTON.
123. Architecture of insect structures. Professor CRAMPTON.
124. Relation of insects to plant fertilization and its importance. Professor CRAMPTON.
125. Insect products of value to man. Professor CRAMPTON.
126. Geographic distribution and methods of distribution of insects, with consideration of life zones, barriers, etc. Professor ALEXANDER.
127. Insect migrations. Professor ALEXANDER.
128. Insect behavior and experimental entomology. Professor CRAMPTON.
129. Enemies of insects. Assistant Professor SWEETMAN.
130. Duration of life. Assistant Professor SWEETMAN.
- ECONOMIC ENTOMOLOGY.—141-160.
141. Control methods. Assistant Professor SWEETMAN.
142. Insect photography and methods of preparing illustrations. Assistant Professor SWEETMAN.
143. Field work and life history investigations, with methods for keeping records. Assistant Professor SWEETMAN.
144. Legislation about insects. Assistant Professor SWEETMAN.
145. Studies of insecticides and their application. Assistant Professor SWEETMAN.
146. Insectary methods. Assistant Professor SWEETMAN.
147. Biological control of insects. Assistant Professor SWEETMAN.
- SYSTEMATIC ENTOMOLOGY.—161-179.
161. History of entomology and of classifications. Professor CRAMPTON.
162. Lives and works of prominent entomologists. Professor ALEXANDER.
163. Abundance of insects; leading specialists in the various order of insects. Professor ALEXANDER.
164. Important collections, public and private; their location and their value. Professor ALEXANDER.

165. Type categories; types of species; genotypes.

Professor ALEXANDER.

166. Rules of nomenclature and how they are used.

Professor ALEXANDER.

180. SEMINAR.—Reports on the current literature of entomology; special reports; monthly meetings (Fernald Entomological Club).

190. ADVANCED AND COLLATERAL READINGS.—The best articles on various topics in entomology are assigned for study, and the subjects are included in the final examinations.

200. THESIS.—Original research on one or several topics in morphology, ecology, economic and systematic entomology. This may require from one-half to two-thirds of the total working time of the student.

COURSES FOR MINOR CREDIT ONLY.

Entomology

INSECT TAXONOMY.—(Courses No. 55, 56, 76.)	Credit, 7.
INSECT MORPHOLOGY.—(Course 57.)	Credit, 3.
INSECT ECOLOGY.—(Courses 79, 80.)	Credit, 6.
INSECT PHYSIOLOGY.—(Course 75.)	Credit, 3.
FOREST ENTOMOLOGY.—(Course 52.)	Credit, 3.
MEDICAL ENTOMOLOGY.—(Course 54.)	Credit, 4.
APPLIED ENTOMOLOGY.—(Courses 53, 78.)	Credit, 4.
APICULTURE.—(Courses 65, 85, 86.)	Credit, 9.

Zoölogy.

COMPARATIVE VERTEBRATE ZOÖLOGY.—(Courses 65, 66.)	Credit, 6.
COMPARATIVE INVERTEBRATE ZOÖLOGY.—(Courses 69, 70.)	Credit, 6.
VERTEBRATE EMBRYOLOGY.—(Courses 75, 76.)	Credit, 6.
SPECIAL PROBLEMS.—(Courses 91, 92.)	Credit, 4 or 6.

Geology.

ELEMENTS OF PETROLOGY.—(Course 51.)	Credit, 3.
HISTORICAL GEOLOGY.—(Course 52.)	Credit, 3.
SPECIAL PROBLEMS.—(Graduate offerings only.) Courses 101, 102.)	Credit, 3 or 6.

Floriculture.

COURSES FOR MAJOR OR MINOR CREDIT.

A definitely outlined major or minor in floriculture is not catalogued at present but such a course may be arranged for individual students. The nature of the work to be taken up will depend upon the previous training and the type of problem desired by the candidate. Application should be made to the head of the Department.

150. CURRENT LITERATURE. A review of scientific literature relating to floricultural practices, including various phases of greenhouse management, soils, fertilizers, plant propagation, insect pest, and disease control, and other pertinent subjects. Credit, 3-6.

155. GARDEN MATERIALS. Studies of specific plants or groups of plants which are used in gardening work. Questions concerning nursery methods of handling such plants are also included. Credit, 3-6.

175. **COMMERCIAL FLORICULTURE.** Problems relating to factors concerned with the commercial production of flowers and plants under glass. Opportunity is also given for study of factors concerned with methods of distribution.

Credit, 3-6

179. **CONSERVATORY PLANTS.** A consideration of subjects dealing with plant materials which are used primarily in conservatories for display purposes and in gardens in warmer climates.

Credit, 3-5

190. **HISTORY OF FLORICULTURE AND FLORICULTURAL LITERATURE.** Consideration of men and events that have influenced the development of floriculture. Brief survey of floricultural literature. Required of all graduates in floriculture.

Credit, 3-5

200. **THESIS.** For candidates taking major work in floriculture.

Credit, 10-15

COURSES FOR MINOR CREDIT ONLY.

51. **GREENHOUSE MANAGEMENT.** Credit, 3

52. **FLORAL ARRANGEMENT.** Credit, 3

75-76. **COMMERCIAL FLORICULTURE.** Credit per semester, 3

79. **CONSERVATORY PLANTS.** Credit, 2

81. **HERBACEOUS GARDENS AND BORDERS.** Credit, 3

82. **SEMINAR.** Credit, 3

Forestry.

COURSES FOR MINOR CREDIT ONLY.

59. **FOREST ECONOMICS.**—The use of land for forest purposes with especial reference to the small forests of New England. Individual problems with collateral reference reading.

Credit, 3

60. **FOREST MANAGEMENT.**—A study of the small unit forest of New England with especial reference to the determination of growing stock, improvement and economic utilization. Individual problems with collateral reference reading

Credit, 3

Horticultural Manufacturers.

COURSES FOR MAJOR OR MINOR CREDIT.

101, 102. **PROBLEM STUDIES.**—A series of problems relating to food preservation. Each problem is assigned definite credit.

Credit, 2-8

111, 112. **SEMINAR.**—A study of literature relating to food preservation

Credit, 1-2

THESIS.—Research on some problem relating to food preservation.

Credit, 15-18

COURSES FOR MINOR CREDIT ONLY.

51. **I. FRUIT AND VEGETABLE PRODUCTS.**—This course, together with 52, gives the student a general elementary knowledge of the science and practice of food preservation. Principles and theories of the various methods of food preservation are the basis for class room exercises. The laboratory work during the first semester deals with the preservation of the autumn fruits and vegetables small fruit products, freezing and dehydration.

1 class hour.

2 2-hour laboratory periods, credit, 3

52. **II. MISCELLANEOUS PRODUCTS.**—This is a continuation of 51. The laboratory work includes pickles and pickle products, maple products, citrus fruits products, fruit syrups, and the canning of meats, poultry, and the spring vegetables.

1 class hour.

2 2-hour laboratory periods, credit, 3

61. **I. COMMERCIAL PRACTICES.**—A survey of commercial practices in canning and manufacturing of food products. This will involve a study of equipment, factory arrangement, sanitation and government regulations, the operation of types of commercial equipment in quantity production.

1 class hour. 2 2-hour laboratory periods, credit, 3.
Prerequisites Horticultural Manufactures 51 and 52.

62. **II. FOOD PRESERVATION PROBLEMS.**—This is a continuation of 51. The class exercises will deal largely with a survey study of the sources of raw materials, commercial methods of manufacture, packing and distribution of the more common foods, also a study of the more important contributions of research. Laboratory work will include the formation of research projects, interpretation of research data. The legal use of adulterants, the simple analysis of foods and the commercial practices as applied to preservation of such materials as are available: fish, meats, poultry, and spring vegetables.

1 class hour. 2 2-hour laboratory periods, credit, 3.
Prerequisite 61.

Landscape Architecture

COURSES FOR MAJOR OR MINOR CREDIT.

(Revised from previous catalog, pages 25-27.)

Courses 190 to 200 are given by arrangement, are largely devoted to individual work, and are available in either semester.

190. **THEORY.**—Special studies in the history and theory of art and of landscape architecture. Credit, 2-10.

The DEPARTMENT.

191. **DESIGN.**—Individual problems in any or all branches of design, including estates, parks, playgrounds, public grounds, etc. Credit, 2-10.

The DEPARTMENT.

192. **CONSTRUCTION.**—Individual problems by arrangement, including engineering, estimating, cost accounting, and methods of construction. Credit, 2-10.

The DEPARTMENT.

194. **PRACTICE.**—Professional field work under supervision, conducted upon ongoing projects as opportunity offers. Credit, 2-10.

By arrangement.

The DEPARTMENT.

195. **SEMINAR.**—Regular meetings for conference. Credit, 1-5.

Professor WAUGH.

196. **PRESENTATION.**—Studies in drafting, pen and crayon, rendering, water coloring, etc. Credit, 2-5.

Assistant Professor ARMSTRONG and Mr. ROBERTSON.

197. **ARCHITECTURE.**—Problems in architecture. Credit, 2-5.

Mr. ROBERTSON.

198. **CIVIC ART.**—Studies and problems in civic art, including city planning, country planning and subdivision, public policies, and administration in park and forest recreation, and landscape conservation. Credit, 2-10.

Professor WAUGH, Assistant Professor ARMSTRONG.

200. **THESIS.** Credit, 2-10.

Certain courses from the undergraduate curriculum are available to qualified students for major or minor credit, as follows:

175. **THEORY of LANDSCAPE ARCHITECTURE.** Credit, 3.
Professor WAUGH.

176. **CIVIC ART.** Credit, 3.
Assistant Professor ARMSTRONG.

- | | |
|------------------------------------|--------------------------------|
| 178. HISTORY OF ARCHITECTURE. | Credit, 3 |
| | Assistant Professor HARRISON. |
| 181. ADVANCED DESIGN. | Credit, 3 |
| | Assistant Professor ARMSTRONG. |
| 182. RESIDENCE GROUNDS DESIGN. | Credit, 3 |
| | Assistant Professor HARRISON. |
| 183. CONSTRUCTION AND MAINTENANCE. | Credit, 3 |
| | Assistant Professor HARRISON. |

COURSES FOR MINOR CREDIT ONLY.

- | | |
|---|-------------------------------|
| 51. MAPPING AND TOPOGRAPHY. | Credit, 3 |
| | Assistant Professor HARRISON. |
| 52. ELEMENTS OF LANDSCAPE ARCHITECTURE.—Engineering details, grade roads, drainage. | Credit, 3 |
| | Assistant Professor HARRISON. |
| 54. GARDEN DESIGN.—Elementary principles of structural design as applied to the simpler garden forms. | Credit, 3 |
| | Professor WAUGH. |

FOR THE DEGREE OF BACHELOR OF LANDSCAPE ARCHITECTURE

To receive the degree of Bachelor of Landscape Architecture each candidate will be required:

1. To have received the degree of Bachelor of Science or Bachelor of Arts from a reputable institution.
2. To have completed as a prerequisite 24 semester credits in technical courses in landscape architecture, substantially equivalent to the technical courses now required in the major, in landscape architecture at this college.
3. In addition to have completed in residence at this institution 30 credits in landscape architecture and closely related subjects prescribed by the Department. (See Fifth Year Program below.)
4. To have maintained a standing of 70 or better in all courses of the Fifth Year.
5. To be able to speak and write good English.
6. To have received the unanimous approval of the faculty of the Department and the usual vote of approval of the faculty of the Graduate School.

FIFTH YEAR PROGRAM.

The regular program of studies for the Fifth Year, subject to minor changes, is as follows:

First Semester.

- | | |
|---|--------------------------------|
| LANDSCAPE ARCHITECTURE 101.—General design and rendering. | Assistant Professor ARMSTRONG. |
| LANDSCAPE ARCHITECTURE 103.—Ecology and physiography. | Professor WAUGH. |
| LANDSCAPE ARCHITECTURE 107.—Specifications, estimates, costs. | Assistant Professor HARRISON. |
| ARCHITECTURE 101.—Elementary problems. | Mr. ROBERTSON. |
| English, assigned. | |

Second Semester.

- | | |
|--|-------------------------------|
| LANDSCAPE ARCHITECTURE 106.—History of Landscape Architecture. | Assistant Professor ARMSTRONG |
| LANDSCAPE ARCHITECTURE 110.—Planting design. | Assistant Professor HARRISON |

LANDSCAPE ARCHITECTURE 112.—Professional practice.

Professor WAUGH.

ARCHITECTURE 102.—Structural problems.
English, assigned.

Mr. ROBERTSON.

Note: Each course in this group is rated at 3 semester credits. Minor deviations from this program may be made at the discretion of the Department.

Mathematics.

COURSES FOR MINOR CREDIT ONLY.

75. HYDRAULIC AND SANITARY ENGINEERING.—Hydrostatics, theoretical hydraulics, orifices, weirs, pipes, conduits, water supply, hydraulic motors, sewers and sewage treatment.

Credit, 5.

Professor OSTRANDER.

91, 92. DIFFERENTIAL AND EMPIRICAL EQUATIONS.—Courses dealing with the methods of solution of the simpler forms of differential equations and their applications to analogous operations in the applied sciences, particularly to chemical reactions. Attention is also given to the various methods of determining empirical equations from observed data, and the interpretation of the various constants involved.

Credit, 3.

Assistant Professor MOORE.

Physics.

COURSES FOR MINOR CREDIT ONLY.

51, 52. MAGNETISM, ELECTRICITY, PHOTO-ELECTRICITY, THERMIONICS, AND APPLICATIONS.—Course 51 deals largely with direct currents, Course 52 with alternating currents, applications of thermionics, and photo-electricity. These courses are planned to give the student a good grounding in theory and methods of measurement in the subjects indicated, which are useful in many fields of investigation. Modern methods are stressed and instruments of precision are used.

class hours.

1 2-hour laboratory period, credit 3

Professor POWERS.

Prerequisites, Physics 26 for Course 51; Physics 51 for Course 52, Math. 28.

53. OPTICS.—An intermediate course in the theory of light. Work in geometrical and physical optics is done. Precision instruments are used in the laboratory.

class hours.

1 2-hour laboratory period, credit 3.

Assistant Professor Alderman.

Prerequisites, Physics 26, Math. 28.

54. THERMODYNAMICS.—A study of heat exchanges and energy changes due to heat in systems of matter. The subject material and experimental methods are useful in other branches of science.

class hours.

1 2-hour laboratory period, credit 3.

Assistant Professor ALDERMAN.

Prerequisites, Physics 25, Math. 28.

75, 76. ADVANCED EXPERIMENTAL WORK IN SELECTED TOPICS.—These courses are largely experimental, and the subject matter is adapted to the needs of the individual student. The research viewpoint is emphasized.

3 2-hour laboratory periods, credit 3.

Professor POWERS.

Prerequisites, Physics 25, 26, and 52; or 53 and 54; Math. 28 and 51.

85, 86. MODERN PHYSICS.—Typical subjects studied are theories of the atom, radiation, quantum theory, spectra, X-ray analysis.

class hours.

Credit 3.

Professor POWERS.

Prerequisites, Physics 25, 26, 51-54; or equivalent; Math. 28, 51.

Pomology.

COURSES FOR MAJOR OR MINOR CREDIT.

101. EXPERIMENTAL METHODS.—A critical study of the methods of research that have been used or may be helpful in pomological work. The following topics will be considered from the point of view of the investigator in pomology:—

1. Statistical methods.
2. Measures of growth and yield.
3. The conduct of plot experiments.
4. Methods of soil study in their relation to pomological research.
5. Chemical methods of pomological research.
6. Methods of physiology applicable to fruit plants.
7. Microchemistry.

Credit, 10-15

102. POMOLOGICAL RESEARCH.—A critical survey of past and current research work in pomology. Semi-weekly meetings for reports and discussions will be held. The following topics will be taken up:—

1. Orchard soil management.
2. Soil fertility and fertilizers.
3. Physiology of pruning tree fruits and bush and vine fruits.
4. Fruit bud differentiation.
5. Sterility and fertility.
6. Genetics of fruit plants.
7. Climatology and winter injury.
8. Advanced morphology.
9. Spraying machinery and equipment.
10. Special practices.

Credit, 10-15

103. ADVANCED LABORATORY WORK.—Each student will be required to become familiar with the research work of the department and to have a share in it. So far as this has value as graduate work, he will receive credit. Credit, 5-10.

104. HISTORY OF POMOLOGY.—The men, institutions, and other influences that have contributed to the development of the science and art of pomology.

Credit, 2-5

105. HORTICULTURAL TAXONOMY.—A study of the history and development of plant classification with special reference to horticultural plants. A study of modern classification carries with it an expression of opinion as to the evolution of cultivated plants.

Credit, 2-5

106. ADVANCED SYSTEMATIC POMOLOGY.—The principles of systematic pomology, including a study of nut and subtropical fruits not usually dealt with in undergraduate courses. Opportunity is also offered for study of leaf and general tree characters of nursery and orchard trees and the relationship of varieties as indicated by these characters as well as those of the fruit.

Credit, 6-10

200. THESIS.—Each student will be required to carry out an original investigation of an assigned problem. In planning, executing and interpreting the data of this problem he must show marked ability. The results are embodied in a thesis to be passed upon by the Department and the Graduate Staff.

Credit, 20-30

COURSES FOR MINOR CREDIT ONLY.

POMOLOGY 26. SMALL FRUITS.—A study of the growing of small fruits, including raspberries, blackberries, strawberries, currants, blueberries, and grapes, dealing with such questions as varieties, selecting a site for the plantation, soil, fertilizers, pruning, harvesting, marketing, etc.

2 class hours.

1 2-hour laboratory period, credit

POMOLOGY 53. GENERAL POMOLOGY.—A study of the most improved practice in fruit production, including such questions as the selection of orchard sites and

oils, laying out and setting the orchard, the structure and growth of fruit plants; the bearing habits, pruning and training of fruits; fertilizers, pollination, winter injury, etc.

1 class hours.

1 2-hour laboratory period, credit 3.

POMOLOGY 56. SPRAYING.—(a) Spraying materials, their composition, manufacture, and preparation for use; the desirable and objectionable qualities of each material; formulas used, cost, tests of purity. (b) Spraying machinery, including all the principal types of pumps, nozzles, hose, and vehicles; their structure and care. (c) Orchard methods in the application of the various materials used, with the important considerations for spraying each fruit and for combating each orchard pest. This course is designed especially to familiarize the student with the practical details of actual spraying work in the orchard.

1 class hour.

2 2-hour laboratory periods, credit 3.

POMOLOGY 75. SYSTEMATIC POMOLOGY (1934-35).—A study of the more important kinds and varieties of fruits grown in the United States, their relationships and nomenclature. Particular emphasis is placed on the identification, classification and value of varieties including a study of the characters of the plant as well as the fruit. Given in alternate years.

1 class hour.

3 2-hour laboratory periods, credit, 4.

POMOLOGY 77. COMMERCIAL POMOLOGY (1933-34).—The picking, handling, storing, and marketing of fruits, including a discussion of storage houses, fruit packages, and methods of refrigeration, grading and packing. This course also considers the leading American and foreign centers of fruit production as they affect our own fruit industry through competition here or abroad. Given in alternate years.

1 class hours.

1 2-hour laboratory period, credit 3.

POMOLOGY 81. ADVANCED POMOLOGY.—A consideration of the scientific principles governing the growth and behavior of fruit-bearing plants. Special attention is given to a critical survey of the more important research work in the field of Pomology.

1 class hours.

1 2-hour laboratory period, credit, 3.

Prerequisite, Pomology 53.

POMOLOGY 82.—ADVANCED POMOLOGY.—A continuation of Course 81.

1 class hours.

1 2-hour laboratory period, credit, 3.

Prerequisite, Pomology 81.

POMOLOGY 83, 84.—SEMINAR.—Advanced study of problems relating to the business of fruit growing. Each student is assigned a major problem in lines of work in which he is particularly interested. He pursues his studies both by reading and research, and the materials obtained will be worked into theses, which are presented to the seminar for discussion. No lectures are given, but seminar meetings are held for one period each week.

1 class hour.

Credit, 1.

The DEPARTMENT.

Poultry Science.

COURSES FOR MAJOR OR MINOR CREDIT.

101. SCIENCE OF POULTRY HUSBANDRY.—A review of the entire field of poultry literature, including books, bulletins, journals, and other technical publications to furnish a comprehensive background of the present status of knowledge in poultry science. Written reports will be required.

Credit, 3-7.

102. POULTRY RESEARCH PROBLEMS.—A critical review of research, experimentation, and demonstration that has been carried out by workers at the various stations in this and other countries. A study of poultry problems in foreign countries together with the outstanding needs in the United States with a view of discovering the needs for fundamental research.

Credit, 3-7.

103. ADVANCED GENETICS.—A lecture course offered during three terms dealing with the experimental study of genetics in relation to plant and animal breeding.

Credit, 3-6.

104. **INTERPRETATION OF DATA.**—A complete analysis of available experimental data on various phases of poultry breeding is undertaken by the student. The student is required to make his own interpretations and to report the results of his analysis. Credit, 3-

105. **RESEARCH IN BREEDING.**—Students may carry on definite experiments in poultry breeding. All research work will be confined to the field of pure and applied genetics. Problems concerned with both physical and physiologic characters may be studied. Credit, 10-1

106. **FEEDING AND NUTRITION.**—A study of the relation of various feeds to the morphology and physiology of the fowl. Special attention is given to the effect of various nutrients on growth, sexual maturity, egg production, character of plumage, and condition of flesh. Complete rations as well as methods of feeding are fully considered. Credit, 5-1

107. **BROODING.**—Studies will be made upon the relation between viability and rate of growth and the following topics: type of brooder, number of chicks in brood, ventilation, humidity, sanitation, exercise, and weather conditions; also comparison of natural methods with artificial methods of rearing chicks. Credit, 3-

108. **INCUBATION AND EMBRYOLOGY.**—A number of problems of a practical, scientific, and mechanical nature relating to incubation are considered. The work in embryology is of an advanced nature, dealing with its relation to morphogenesis and heredity, and presupposes an elementary knowledge of the embryology of the chick. Credit, 3-1

109. **THESIS.**—Research work may be carried out in the following lines: breeding, nutrition, brooding and incubation, and embryology. Originality and thoroughness are particularly emphasized. Credit, 10-

COURSES OFFERED FOR MINOR CREDIT ONLY.

80. **POULTRY PROBLEMS** —Open to seniors and graduate students. The course consists of problems chosen by the students under the guidance of the department. Credit, 1-

Sociology.

COURSES FOR MAJOR OR MINOR CREDIT.

151. **FORMS AND THEORIES OF GOVERNMENT.**—Theories of the origin and development of the state; history of the governments of Great Britain, France, Germany, Italy, and Spain as typical of the governments of western Europe; examination of the constitutional governments recently set up in Europe. Credit,

Professor MACKIMMIE

152. **MODERN EUROPEAN HISTORY.**—A comprehensive view of the history of Europe as a whole from the Renaissance to the French Revolution with a more intensive study of certain selected periods. In this second aspect attention will be focused on social, intellectual, political, agricultural and economic elements which have entered into the development of civilization. Credit,

Professor MACKIMMIE

153. **CONTEMPORARY CIVILIZATION.**—Continues and completes the studies begun in Course 152. The general history of Europe from Napoleon to the close of the World War. Credit,

Professor MACKIMMIE

154. **CIVILIZATION AND CULTURE.**—A study of human social and cultural development, including agricultural, with reference to the sources of our knowledge. Attention is given to the results of recent scholarship in this field. Credit,

Assistant Professor CUTLER

175. SOCIAL REFORMS.—An appraisal of present-day efforts to adjust our social conditions, in country and city, to the situation created by the industrial revolution; a study is made of recent literature on this subject. Credit, 3.

Assistant Professor CUTLER.

177. SOCIOLOGICAL SURVEYS.—The survey in actual practice; the bird's-eye view; the segmental survey; measurement; causation; reporting and publishing the findings. Credit, 3.

Assistant Professor CUTLER.

178. FIELD WORK OF AN INVESTIGATIONAL NATURE.—Research methods employed by sociologists—measurements, exploration, criticism, surveys; scientific value of the representative sample; quantitative measurements versus observation, comparison, and correlation; scholarly application of research methods by members of the class. Credit, 3.

Assistant Professor CUTLER.

179-180. SEMINAR.—The seminar described under Sociology 79, and 80. Graduate students render reports on research in which they engage, and upon selected portions of current sociological literature. The reports serve as the basis for general discussion. Credit, 3.

Professors MACKIMMIE and CUTLER.

182. SOCIAL CONDITIONS OF AMERICAN LIFE.—Social and economic factors in progress; farm income and life; standards of living. Credit, 3.

Assistant Professor CUTLER.

183. SOCIAL CONDITIONS OF OLD WORLD LIFE.—A sociological investigation of life in Europe, the Orient, and the Far East; co-operative enterprise in Denmark; agriculture in China after one hundred twenty generations; rural traits. Credit, 3.

Assistant Professor CUTLER.

184. INSTITUTIONS OF BUSINESS AND INDUSTRY.—Forms of business organization. Farming, markets, business cycles, and business forecasting. Credit, 3.

Professor MACKIMMIE.

185. ORGANIZATION OF PUBLIC AND PRIVATE FINANCE.—Corporate finance; taxation and taxation problems; banking; and credit. Credit, 3.

Professor MACKIMMIE.

186. FARMERS' ORGANIZATIONS.—A study of social and economic co-operation. Credit, 3.

Assistant Professor CUTLER.

187. TOWN AND VILLAGE LIFE.—The agricultural village; the small town in relationship to its environing neighborhoods, ruralization, part-time farming. Credit, 3.

Assistant Professor CUTLER.

188. THE MODERN CITY.—A survey of industrial and mercantile centers with their problems of poverty, health and sanitation, planning and zoning, the "unearned increment," and disrupted primary groups; the social, administrative and economic organization of cities; metropolitan planning. Credit, 3.

Assistant Professor CUTLER.

189. UTOPIAS AND OTHER SOCIAL MOVEMENTS.—A study of utopias in literature and in fact; the literature of rural life; contemporary social movements. Credit, 3.

Assistant Professor CUTLER.

190. LOCAL GOVERNMENT.—Proposed improvements in local government. Credit, 3.

Assistant Professor CUTLER.

191. COMMUNITY LEADERSHIP.—Qualities and methods making for successful leadership in rural communities. Credit, 3.

Assistant Professor CUTLER.

192. SOCIAL CONDITIONS IN THE CARIBBEAN REGION.—A sociological study of life and industry in the American possessions and protectorates; relation of the West Indies to the United States; the peon mind. Credit,

Assistant Professor CUTLER.

193. THE LEAGUE OF NATIONS.—Social and agricultural problems in the international aspects. Credit,

Assistant Professor CUTLER.

200. THESIS.—Upon an approved subject, and must be a valuable contribution to knowledge. Especial stress is laid upon the feature of originality in the case of candidates for the doctorate.

Credit, for master's degree, 5; for doctor's degree, 3.

Veterinary Science.

COURSES FOR MINOR CREDIT ONLY.

75. COMPARATIVE VETERINARY ANATOMY.—The structures of the horse, cow, sheep, and pig are studied.

3 lectures a week.

Credit,

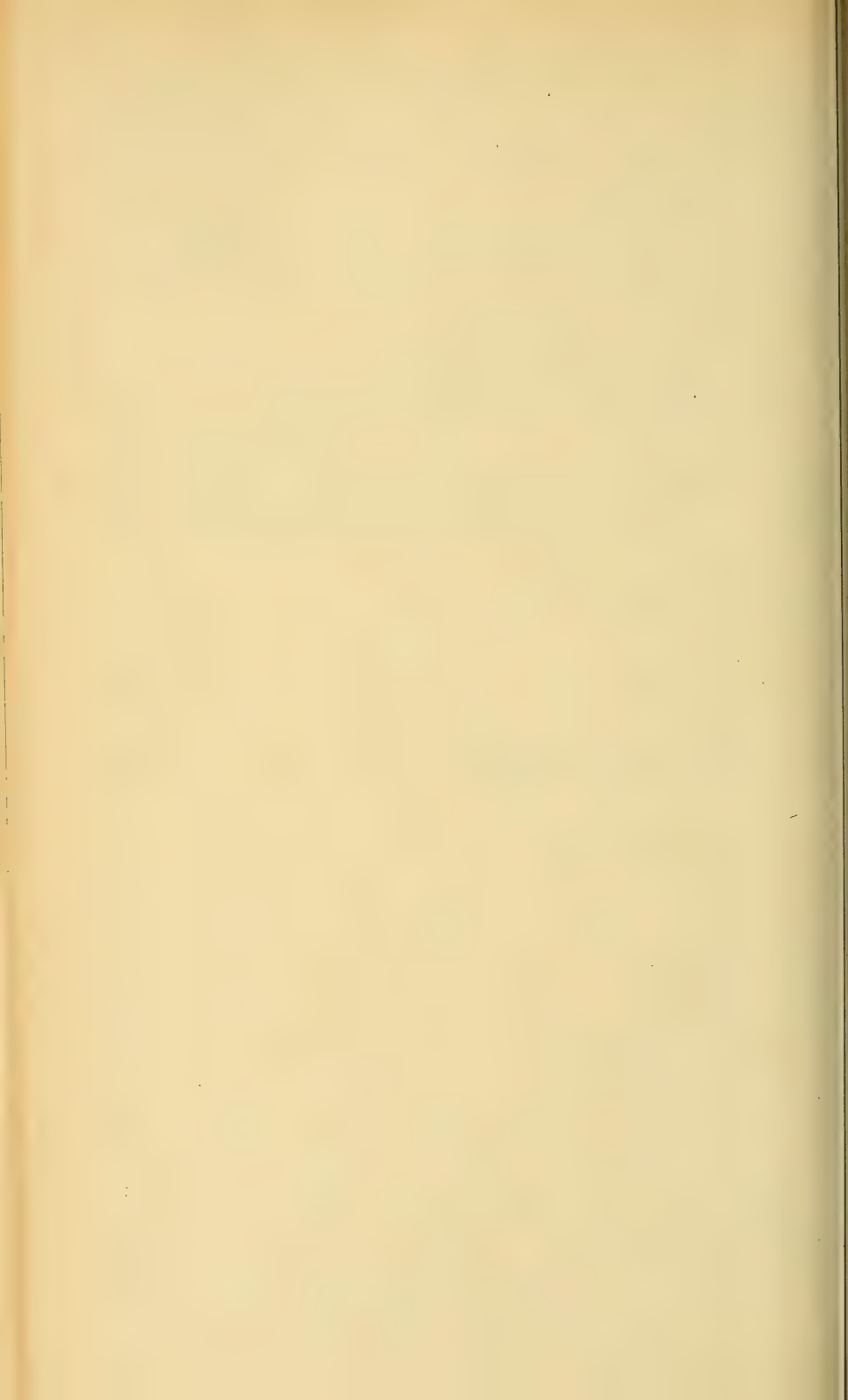
76. GENERAL VETERINARY PATHOLOGY.—The principles of pathology and their application as related to diseases of domesticated animals.

3 lectures a week.

Credit,

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AMHERST, MASSACHUSETTS

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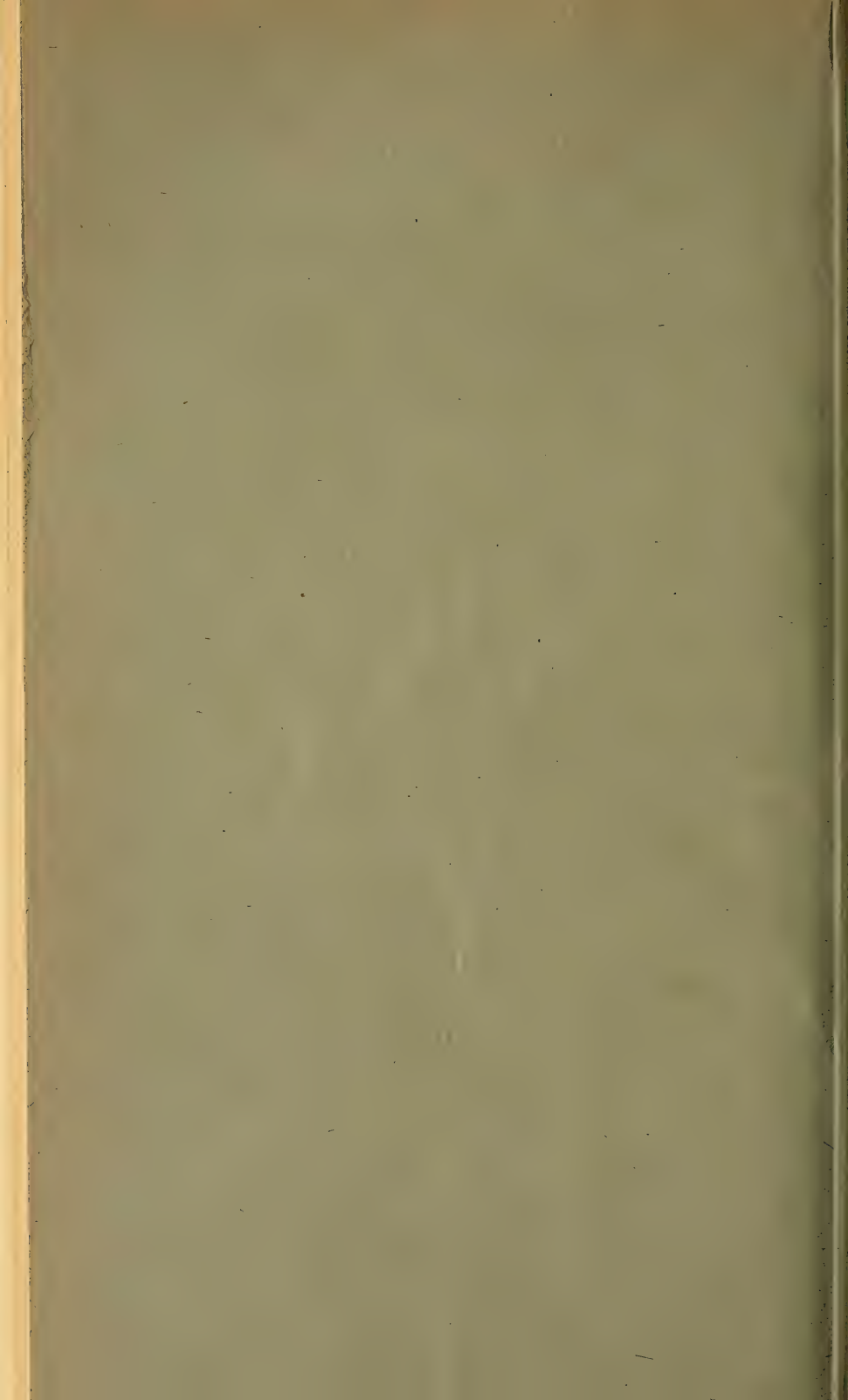
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For the Sessions of 1932-1933

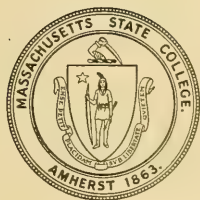


MASSACHUSETTS STATE COLLEGE



THE COLLEGE CATALOGUE

This issue of The Bulletin contains the catalogue of the College for the sessions of 1932-33 which is part of the Seventieth Annual Report of the Massachusetts State College and as such is part II of Public Document 31. (Sec. 8, Chapter 75 of the General Laws of Massachusetts.)



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LEGISLATION PERTAINING TO THE COLLEGE.

Without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and mechanic arts in such manner as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life. — *Act of Congress July 2, 1862.*

THE COLLEGE CHARTER. — "The leading object of the college shall be to teach subjects relating to agriculture and the mechanic arts, so as to promote liberal and practical education. Its curriculum may include other scientific and classical studies and shall include military tactics." — *From Chapter 75 of the General Laws of Massachusetts.*

FOREWORD.

This issue of the catalogue presents a description of the course of study as it planned for the college year 1933-34. Beginning with that year the course of study is to change from a term to a semester basis. The course of study for the current year, 1932-33, is described in a supplementary bulletin which may be secured from the Secretary of the College.

The College reserves, for itself and its departments, the right to withdraw or change the announcements made in its catalogue.

CALENDAR.

1933.

January 3, Tuesday, 8.00 A.M.	Winter term begins
February 22, Wednesday	Holiday, Washington's Birthday
March 18, Saturday	Winter term ends
March 27, Monday, 8.00 A.M.	Spring term begins
April 19, Wednesday	Holiday, Patriots' Day
May 30, Tuesday	Holiday, Memorial Day
June 2-5, Friday-Monday	Stockbridge School Commencement
June 9-12, Friday-Monday	Commencement
June 15-17, Thursday-Saturday	Entrance Examinations
July 5-August 12	Summer School
September 13-16, Wednesday-Saturday	Entrance Examinations
September 18, Monday	First semester begins for Freshmen
September 20, Wednesday	First semester begins for Upper Classmen
October 2, Monday	First semester begins for Stockbridge School
October 12, Thursday	Holiday, Columbus Day
November 11, Saturday	Holiday, Armistice Day
November 29-December 4, Wednesday 12.30 M.-Monday, 8.00 A.M.	Thanksgiving Recess
December 20-January 2, Wednesday 12.30 M.-Tuesday, 8.00 A.M.	Christmas Recess

1934.

February 3, Saturday	First semester ends
February 5, Monday, 8.00 A.M.	Second semester begins
February 22, Thursday	Holiday, Washington's Birthday
March 31-April 9, Saturday 12.30 M.-Monday, 8.00 A.M.	Easter Recess
April 19, Thursday	Holiday, Patriots' Day
May 30, Wednesday	Holiday, Memorial Day
June 1-4, Friday-Monday	Stockbridge School Commencement
June 8-11, Friday-Monday	Commencement
June 14-16, Thursday-Saturday	Entrance Examinations

THE TRUSTEES.

Organization of 1932.

MEMBERS OF THE BOARD.

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WILLIAM P. BROOKS, Ph.D., D.Agr.,	6 Farview Way
Professor of Agriculture, Emeritus.	
HENRY T. FERNALD, Ph.D.,	707 East Concord Avenue, Orlando, Florida
Professor of Entomology, Emeritus.	

GEORGE W. ALDERMAN, B.A.,	Physics Laboratory—Pelham
Assistant Professor of Physics.	
CHARLES P. ALEXANDER, Ph.D.,	Fernald Hall—Old Town Road
Professor of Entomology.	
CARROLLE E. ANDERSON, B.S.,	Clark Hall—Ashfield
Instructor in Botany.	
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Assistant Professor of Landscape Architecture and Superintendent of Grounds.	
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Instructor in Physical Education.	
LUTHER BANTA, B.S.,	Stockbridge Hall—7 Allen St.
Assistant Professor of Poultry Husbandry.	
ELLSWORTH BARNARD, M.A.,	Stockbridge Hall—31 East Pleasant St.
Instructor in English.	
ROLLIN H. BARRETT, M.S.,	Stockbridge Hall—4 Chestnut St.
Assistant Professor of Farm Management.	
ARTHUR B. BEAUMONT, Ph.D.,	Stockbridge Hall—51 Amity St.
Professor of Agronomy and Head of Department.	
LYLE L. BLUNDELL, B.S.,	Wilder Hall—5 Northampton Road
Professor of Horticulture.	

First address is business, second is residence.
* To take office February 1, 1933.

- HAROLD D. BOUTELLE, B.S., Ch.E., . . . Mathematics Building—29 Lincoln Ave.
Instructor in Mathematics.
- LEON A. BRADLEY, Ph.D., . . . Bacteriology Laboratory—Cosby Ave.
Professor of Bacteriology.
- LAWRENCE E. BRIGGS, B.S., . . . Physical Education Building—3 Allen St.
Instructor in Physical Education.
- MILDRED BRIGGS, M.S., . . . Stockbridge Hall—6 Nutting Ave.
Assistant Professor of Home Economics.
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Professor of Agricultural Economics and Head of Department.
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Professor of Organic and Agricultural Chemistry and Head of Department.
- WALTER W. CHENOWETH, M.S., Horticultural Manufactures Lab. North Amherst
Professor of Horticultural Manufactures and Head of Department.
- ORTON L. CLARK, B.S., . . . Clark Hall—12 College St.
Associate Professor of Botany.
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Professor of Insect Morphology.
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Assistant Professor of Agronomy.
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Lab.—103 Butterfield Ter.
Assistant Professor of History and Sociology.
- WILLIAM H. DAVIS, Ph.D., . . . Clark Hall—12 Nutting Ave.
Assistant Professor of Botany.
- LEWELLYN L. DERBY, . . . Physical Education Building—81 Pleasant St.
Assistant Professor of Physical Education.
- HARRY R. DESILVA, Ph.D., . . . Stockbridge Hall—32 Amity St.
Professor of Psychology.
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Assistant Professor of Agronomy.
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Assistant Professor of Inorganic Chemistry.
- MARY J. FOLEY, M.S., . . . South College—19 Phillips St.
Instructor in Agricultural Economics.
- RICHARD C. FOLEY, M.S., . . . Stockbridge Hall—The Campus
Instructor in Animal Husbandry.
- JAMES A. FOORD, M.S. Agr., . . . Stockbridge Hall—54 Lincoln Ave.
Professor of Farm Management and Head of Department.
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Assistant Professor of Modern Languages.
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Professor of Dairy Industry and Head of Department.
- ARTHUR P. FRENCH, M.S., . . . French Hall—North Amherst
Assistant Professor of Pomology.
- GEORGE E. GAGE, Ph.D., . . . Bacteriology Laboratory—Lincoln Block
Professor of Bacteriology and Physiology and Head of Department.
- MARY E. M. GARVEY, B.S., . . . Bacteriology Laboratory—29 South Prospect St.
Instructor in Bacteriology.
- CONSTANTINE J. GILGUT, B. S., . . . Clark Hall—3 Allen St.
Instructor in Botany.
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Professor of Zoölogy and Geology; Head of Department of Entomology, Zoöl-
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Professor of Poultry Husbandry and Head of Department.
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Professor of Botany and Head of Department.

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Professor of Mathematics and Head of Department.
- RANSOM C. PACKARD, B.S.A., Bacteriology Laboratory—North Amherst
Vocational Instructor in Bacteriology.
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Instructor in Horticultural Manufactures.
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Professor of Animal Husbandry; Head of Department; Head of Division of Agriculture.
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ALDIS E. FLINT, Technical Assistant in Bacteriology.	Bacteriology Laboratory—Pelham Road
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Graduate Assistant, Department of Poultry Husbandry.	
CLARENCE A. JEWETT,	Power Plant—112 Pleasant St.
Superintendent of Buildings.	
EVELYN D. KIMBALL, B.S.,	Bacteriology Laboratory—1 Harkness Road
Graduate Assistant, Department of Bacteriology and Physiology.	
EDNA MACHON,	The Infirmary—The Infirmary
Resident Nurse.	
MAJEL M. MACMASTERS, M.S.,	Goessmann Laboratory—4 Tyler Place
Graduate Assistant, Department of Chemistry.	
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House Mother.	
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Graduate Assistant, Department of Physical Education.	
UDOLPH O. MONOSMITH, B.S.,	Wilder Hall—11 Gaylord St.
Graduate Assistant, Department of Landscape Architecture.	
VILLIAM J. MOORE,	Stockbridge Hall—35 Lincoln Ave.
Graduate Assistant, Department of Agronomy.	
RALPH F. NICKERSON, M.S.,	Goessmann Laboratory—4 Cosby Ave.
Graduate Assistant, Department of Chemistry.	
VILLIAM R. PHINNEY, B.S.,	Stockbridge Hall—77 Pleasant St.
Graduate Assistant, Department of Education.	
KATHERINE POWELL,	Stockbridge Hall—116 Pleasant St.
Department Librarian.	
RYAN C. REDMON, B.S.,	Goessmann Laboratory—35 North Prospect St.
Laboratory Assistant in Chemistry.	
BAYARD SPAULDING, A.B.,	Goessmann Laboratory—5 Hitchcock St.
Graduate Assistant, Department of Chemistry.	
LIZABETH B. STRACHAN,	South College—17 High St.
Principal Bookkeeper, Treasurer's Office.	
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Curator, Goessmann Laboratory.	
ESSIE M. WEYMOUTH,	The Library—Butterfield Ter.
Cataloguer.	
VEZ W. WILLIAMS, M.S.,	Fernald Hall—Old Town Road
Graduate Assistant, Department of Entomology, Zoölogy and Geology.	
AROLD A. WILSON,	Waltham Field Station—Waltham
Technical Assistant, Waltham Field Station.	

The Experiment Station Staff.

RED J. SIEVERS, M.S.,	East Experiment Station—East Pleasant St.
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Assistant Research Professor of Chemistry.	
JOHN S. BAILEY, M.S.,	French Hall—North Amherst
Assistant Research Professor of Pomology.	
ARTHUR B. BEAUMONT, Ph.D.,	Stockbridge Hall—51 Amity St.
Professor of Agronomy and Head of Department.	
ARTHUR I. BOURNE, B.A.,	Fernald Hall—12 East Pleasant St.
Research Professor of Entomology.	
WILLIAM L. DORAN, M.S.,	Clark Hall—31 East Pleasant St.
Research Professor of Botany.	

- WALTER S. EISENMENGER, Ph.D., . . . Stockbridge Hall—33 East Pleasant St.
Research Professor of Agronomy.
- CARL R. FELLERS, Ph.D., . . . Horticultural Manufactures Lab.—16 Fearing St.
Research Professor of Horticultural Manufactures.
- HENRY J. FRANKLIN, Ph.D., . . . Cranberry Station—East Warehouse
Research Professor in charge of Cranberry Station.
- JAMES E. FULLER, Ph.D., . . . Bacteriology Laboratory—Farview Warehouse
Assistant Research Professor of Bacteriology.
- EDWIN F. GASKILL, B.S., . . . East Experiment Station—North Pleasant St.
Assistant to the Director.
- CHARLES S. GIBBS, D.V.M., Ph.D., . . . Paige Laboratory—117 Butterfield Terrace
Research Professor of Veterinary Science.
- EMIL F. GUBA, Ph.D., . . . Waltham Field Station—Waltham Field Station
Assistant Research Professor of Botany.
- CHRISTIAN I. GUNNESS, B.S., . . . Stockbridge Hall—105 Butterfield Terrace
Meteorologist and Head of Department of Agricultural Engineering.
- FRANK A. HAYS, Ph.D., . . . Stockbridge Hall—Oneac
Research Professor of Poultry Husbandry.
- EDWARD B. HOLLAND, Ph.D., . . . Goessmann Laboratory—28 North Prospect St.
Research Professor of Chemistry.
- LORIAN P. JEFFERSON, M.A., . . . South College—62 Pleasant St.
Assistant Research Professor of Agricultural Economics.
- CARLETON P. JONES, M.S., . . . Goessmann Laboratory—8 Nutting Avenue
Assistant Research Professor of Chemistry.
- LINUS H. JONES, Ph.D., . . . Clark Hall—1 Allen Street
Assistant Research Professor of Botany.
- RAY M. KOON, M.S., . . . Waltham Field Station—Waltham Field Station
Research Professor of Vegetable Gardening; in charge of Waltham Field Station.
- JOSEPH B. LINDSEY, Ph.D., . . . Goessmann Laboratory—47 Lincoln Avenue
Vice-Director and Head of Department of Plant and Animal Chemistry.
- RONALD L. MIGHELL, M.S., . . . Stockbridge Hall—North Amherst
Assistant Research Professor of Farm Management.
- FRED W. MORSE, M.S., . . . Goessmann Laboratory—40 Pleasant St.
Research Professor of Chemistry.
- WILLIAM S. MUELLER, M.S., . . . Flint Laboratory—13 Fearing St.
Assistant Research Professor of Dairying.
- A. VINCENT OSMUN, M.S., . . . Clark Hall—16 Northampton Road
Professor of Botany and Head of Department.
- DAVID ROZMAN, Ph.D., . . . South College—62 Pleasant St.
Assistant Research Professor of Agricultural Economics.
- JACOB K. SHAW, Ph.D., . . . French Hall—5 Farview Warehouse
Research Professor of Pomology.
- BERNICE C. WAIT, Ph.D., . . . East Experiment Station—The Davenport
Assistant Research Professor of Home Economics
- WARREN D. WHITCOMB, B.S., . . . Waltham Field Station—Waltham Field Station
Assistant Research Professor of Entomology.
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Assistant Research Professor of Floriculture.
- ROBERT E. YOUNG, M.S., . . . Waltham Field Station—Waltham Field Station
Assistant Research Professor of Vegetable Gardening.

OTHER EXPERIMENT STATION OFFICERS.

- HARRY L. ALLEN, . . . West Experiment Station—89 Main Street
Laboratory Assistant in Chemistry.
- ALYN S. BALL, . . . Clark Hall—94 Main Street
Laboratory Assistant in Botany.
- EMMETT BENNETT, B.S., . . . Goessmann Laboratory—42 Lincoln Avenue
Research Assistant in Chemistry.
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Research Assistant in Horticultural Manufactures.
- MAURICE M. CLEVELAND, M.S., . . . Horticultural Manufactures
Lab.—North Pleasant St.
Fellow, Department of Horticultural Manufactures.
- MRS. MADALINE V. COWING, B.S., . . . East Experiment Station—56 Main St.
Laboratory Assistant in Home Economics.
- MATTHEW C. DARNELL, Jr., B.S., . . . Stockbridge Hall—86 Pleasant St.
Fellow, Department of Agronomy.
- J. ELIZABETH DONLEY, A.B., . . . South College—3 McClellan St.
Laboratory Assistant in Agricultural Economics.
- EDWARD B. DONNELLY, . . . Waltham Field Station—Waltham
Technical Assistant in Floriculture.
- F. ETHEL FELTON, B.A., . . . East Experiment Station—The Davenport
Editorial Assistant.
- MARY C. HUGHES, . . . French Hall—30 Cottage St.
Laboratory Assistant in Pomology.
- PAUL D. ISHAM, M.S., . . . Horticultural Manufactures Lab.—4 Cosby Ave.
Fellow, Department of Horticultural Manufactures.
- JOHN W. LOCKE, . . . Tillson Farm—Tillson Farm
Poultry Plant Foreman.
- OREANA A. MERRIAM, B.S., . . . East Experiment Station—34 Lincoln Ave.
Laboratory Assistant in Home Economics.
- GLADYS I. MINER, . . . Clark Hall—South Deerfield
Herbarium Curator.
- MICHAEL G. O'CONNOR, B.S., . . . Horticultural Manufactures Lab.—Springfield
Fellow, Department of Horticultural Manufactures.
- LEONARD R. PARKINSON, . . . Hatch Barn—Hatch Barn
Technical Assistant in Animal Husbandry.
- MRS. DORIS E. ROBERTSON, A.B., . . . Stockbridge Hall—8 South Prospect St.
Research Assistant in Farm Management.
- RUBY SANBORN, A.B., . . . Stockbridge Hall—30 Fearing St.
Research Assistant in Poultry Husbandry.
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Research Assistant in Agricultural Economics.
- ERNEST G. SMITH, B.S., . . . Horticultural Manufactures Lab.—Durfee Range
Fellow, Department of Horticultural Manufactures.
- MOSES E. SNELL, . . . Brooks Farm—Brooks Farm
Technical Assistant in Agronomy.

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Assistant Veterinary Pathologist.
- I. ROBERT DE ROSE, M.S., . . . West Experiment Station—Farview Way
Assistant Chemist.
- OLIVER S. FLINT, B.S., . . . Paige Laboratory—Cosby Ave.
Assistant Research Professor.
- RALPH L. FRANCE, M.S., . . . Bacteriology Laboratory—Mount Pleasant
Assistant Bacteriologist.
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- FREDERICK A. McLAUGHLIN, B.S., . . . West Experiment Station—4 Nutting Ave.
Assistant Research Professor, Seed Control.
- PHILIP H. SMITH, M.S., . . . West Experiment Station—102 Main St.
Chief of Laboratory, Feed Control.
- HENRY VAN ROEKEL, M.S., D.V.M., . . . Paige Laboratory—
Chief of Laboratory, Poultry Disease Control.
- MIRIAM K. CLARKE, A.B., . . . Paige Laboratory—87 Pleasant St.
Laboratory Assistant.

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Junior Chemist.	
*GEORGE J. LARSINOS, M.S.,	West Experiment Station—
Junior Chemist.	
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Laboratory Assistant.	
ALBERT F. SPELMAN,	West Experiment Station—Cosby Ave.
Junior Chemist.	
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Laboratory Assistant.	

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Extension Specialist in Agricultural Engineering.	
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Extension Specialist in Home Economics.	
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Extension Specialist in Poultry Husbandry.	
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Extension Specialist in Farm Management.	

* On leave of absence.

Temporary appointment.

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WILBUR H. THIES, M.S.,	French Hall—North Amherst
Extension Specialist in Pomology.	

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GENERAL INFORMATION.

HISTORICAL SKETCH.

One of the outstanding achievements of the middle of the nineteenth century was the remarkable development in the field of science. This, in turn, brought about great changes in industry, transportation and agriculture and stimulated the desire for new information and further training. People were enthusiastic about the possibilities of the future. It is not surprising, therefore, that scientific courses gradually found their way into the academies and colleges. This was not without opposition from the friends of the old classical training, however. In many instances institutions founded along literary and philosophical lines did not favor the introduction of courses based on the needs of students desiring to perfect themselves in the technical principles and practices of the arts and industry. The demand for such courses increased nevertheless. It was evident that the old order of education was changing but at the time the new was not apparent. It was under such conditions that the Massachusetts State College had its birth.

THE MORRILL ACT.

This demand for technical education finally crystallized into a bill before Congress known as the Morrill Act of 1862 endowing colleges for this purpose in every state of the Union. The original bill was framed by Senator Justin L. Morrill of Vermont and its final enactment obtained under his leadership. This bill provided in each state for "the endowment for and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanics arts in such manner as the legislatures of the states may respectively prescribe in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." Massachusetts accepted the provisions of the Morrill Act in 1863 by founding a new college at Amherst to be known as "Massachusetts Agricultural College" and Chapter 75 of the General Laws of the Commonwealth states that "the leading object of the College shall be to teach subjects relating to agriculture and the mechanics arts so as to promote liberal and practical education. Its curriculum may include other scientific and classical studies and shall include military tactics."

FOUNDING AND EARLY GROWTH OF THE COLLEGE.

The Trustees of the Massachusetts Agricultural College were incorporated in 1863 and officers were appointed in that year. It was not until October 2, 1867, however, that the institution at Amherst was formally opened to students. At that time there were four teachers on the faculty and four wooden buildings on the campus. The number of students steadily increased during the first term and by December, 1867, forty-seven had been admitted. From this modest beginning the College has grown steadily and its influence has been felt in many parts of the world. On April 15, 1931, the name of the institution was changed by legislative enactment to Massachusetts State College.

SCOPE OF THE INSTITUTION.

In a sense, experimental work is as old as the institution, for during its earliest years some very important investigations were carried on by the instructors. Research work was established as a separate unit, however, in 1882, when the State provided for the establishment of an agricultural experiment station here. In 1887 another experimental unit, the Hatch Experiment Station, was provided by Federal appropriation. These two stations were combined in 1895 and have since been known as the Massachusetts Agricultural Experiment Station.

State law also provides for the maintenance at this College of a Control Service the purpose of which is to regulate the sale of certain agricultural products for the protection of purchasers and also to eliminate certain diseases of poultry.

The Extension Service of the College was established in 1912 and was first

supported by grants of Federal Funds in 1914. This division of the College undertakes the large responsibility of teaching adults and boys and girls throughout the State, who cannot come to the College for instruction, better methods in agriculture and home-making. Approximately 285,000 people in the Commonwealth received help in 1930 through this Extension Service.

RESIDENT INSTRUCTION.

Opportunities for resident instruction have greatly expanded since the founding of the College in 1863. The courses offered now include such short courses as the Winter School, Summer School, and the two-year course in practical agriculture known as the Stockbridge School. Then, there are the four-year course leading to the Bachelor of Science degree and the Graduate School which offers opportunity for study for advanced degrees. The undergraduate curriculum leading to the Bachelor of Science degree offers opportunity for specialization in Agriculture, Home Economics, Horticulture, Landscape Architecture, Physical and Biological Sciences and Social Sciences. The curriculum includes strong supporting courses in the Humanities and the aim is to give to each student as high a degree of efficiency in some particular branch of learning as is possible without sacrificing the breadth of knowledge and training which should characterize the well-rounded college course.

VOCATIONS OF GRADUATES.

The vocations in which the majority of graduates of the College are engaged give an idea of the sort of training which is provided. The largest number are serving as teachers in schools and colleges or as specialists in Extension education. The various phases of agriculture attract the next largest number and others listed in order are industrial workers, landscape architects and engineers, research experts and technologists in such scientific fields as chemistry, botany, entomology, bacteriology, etc.; professional practitioners such as physicians, lawyers, ministers, and a wide variety of miscellaneous callings.

PRESIDENT'S STATEMENT.

In connection with the dedication of the Physical Education Building, President Thatcher made the following statement concerning the type of education offered at this College: "The type of education which this College offers deals largely with the physical phenomena of the universe and of human life. This is the so-called 'scientific' training. When carried to extremes of application, it becomes 'industrial' or 'vocational' education; but when combined with a proper study of human social relationships, it is 'education for citizenship.'"

"A state-supported college like ours should, of course, do all that it can to increase the capacity of its students for enjoyment of life and for participation in society, but its chief duty is to prepare its students to contribute to the physical welfare and the development of material prosperity of the state and nation which provide the facilities for this type of education.

"A college course at such an institution must provide for intellectual development as well as for the acquirement of skilled knowledge of the physical facts of science by its students. And it ought also to give them sound bodies and correct habits of physical life, in order that they may have adequate health and strength to carry an active share in the work of the world. It may properly go even so far as to encourage in its students the habit to 'play the game' of life in accordance with established rules and in the spirit of true sportsmanship, which seeks to win for oneself at the same time that every rightful opportunity is given to others.

"Our ideal in education then is to prepare our students for citizenship by giving them a trained mind, a useful knowledge of the principles of science and the facts of the physical universe, a healthy body and correct habits of physical life, and a keen sense of one's duties to and relationships with others. 'A sound mind in a healthy body' is what we hope will result from a course of training at Massachusetts State College."

THE COLLEGE CAMPUS.

Hand in hand with this steady growth of the College, there has come a marked expansion in physical equipment. The original farm of 1867, with its run-down

fields and degenerated apple orchards cut up here and there by old Virginia rail fences and hedge rows has metamorphosed into one of the most attractive college campuses in New England. A brief statement of land, buildings and equipment will show to what extent the original four wooden buildings have been out-grown.

LOCATION AND LANDS.

The State College is located in Amherst, a town of about six thousand people, overlooking one of the most picturesque sections of the Connecticut Valley. From the standpoint of teaching material in the field of science and agriculture, the location is ideal. Amherst is ninety-seven miles from Boston and may be reached by the Central Vermont Railroad, or by electric cars or bus connections from Northampton, Holyoke, and Springfield. The campus consists of a tract of approximately seven hundred acres, lying about a mile north of the village center. In addition the college owns another area of seven hundred and fifty-five acres located about six miles north of the campus on Mount Toby. This is used for a demonstration forest.

BUILDINGS AND EQUIPMENT.

The campus is laid out in the form of an oval attractively set off by the college pond in the center. Around this oval are grouped the main buildings of the college. In the following list the buildings are presented in order about this oval.

South College.—Here are located the administrative offices, including the offices of the President, Dean, Treasurer, Secretary, the Extension Service, Short Courses, and Women's Adviser. The Department of Agricultural Economics also has offices here. The west wing is used as a freshman dormitory. This accommodates about forty students. Erected 1885.

North College.—This has been recently remodelled as a freshman dormitory accommodating about seventy-five men students. A large living room serves as the center of freshman social life on the campus. North College was erected in 1867.

Flint Laboratory.—The work in Dairy Industry is carried on here. The building is well equipped with modern machinery for the production of market milk, ice-cream, butter and cheese. This building was erected in 1911 and was named in honor of Charles L. Flint, fourth president of the college.

Stockbridge Hall.—Here are located the departments of Agronomy, Animal Husbandry, Agricultural Engineering, Farm Management, Poultry Husbandry, Education and English. In addition to the lecture rooms and offices are laboratories for soil fertility, field crops, poultry, and a drafting room for engineering. The clothing and house furnishing laboratories for the Home Economics Department are also located here. In the rear of the building are the greenhouse and head house used by the Department of Agronomy for work with crops and soils. A special reference library for the Division of Agriculture is on the second floor. Bowker Auditorium, the largest auditorium on the campus, is also in this building. It has a seating capacity of nine hundred and is named in honor of William H. Bowker, a member of the first graduating class, later a Trustee of the College, and one of the pioneers in the fertilizer industry. Stockbridge Hall was erected in 1914 and named in honor of Levi Stockbridge, a former president and professor of Agriculture in the college.

Horticultural Manufactures Laboratory.—Erected in 1929. Both research and instructional work in food preservation are carried on here. The laboratories are well equipped with modern apparatus used in this rapidly developing field.

Grinnell Arena.—Erected in 1910 primarily for livestock judging. An abattoir was constructed in 1930 as an addition to the original building. Named in honor of James S. Grinnell, for twenty-two years a trustee of the College.

Agricultural Engineering Laboratory.—Included in this laboratory for students of Agricultural Engineering, are a carpenter shop, general repair shop, and a laboratory for farm machinery and motors. The building was erected in 1916.

Draper Hall.—The college dining hall is located here. Service is by cafeteria style and there are seating accommodations for about four hundred and fifty at

one time. There is a small banquet room on the second floor and several dormitory rooms. Erected 1902 and subsequently, and named in honor of James Draper, for twenty years a trustee of the college.

Goessmann Laboratory.—This is a modern chemical laboratory. The building is approximately two hundred feet by eighty feet and contains eight large laboratory rooms, an auditorium, a chemical library, and lecture rooms. The east wing of the third floor is occupied by the research professors in Chemistry of the Experiment Station. In addition to the work in Chemistry the class work in German is held in this building. Goessmann Laboratory was erected in 1924 and named in honor of Charles A. Goessmann, the first professor of Chemistry at the college.

West Experiment Station.—The state control work is centralized here. Fertilizers, seeds, and feeds are analyzed or inspected in accordance with the state law, to determine whether or not they meet their guarantee. Erected 1886.

East Experiment Station.—The office of the Director of the Experiment Station and other administrative offices of the Experiment Station are located in this building.

Abigail Adams House.—This is a modern girls' dormitory accommodating about one hundred students. It was erected in 1919 and named for Abigail Adams, a staunch believer in farm life, the wife of John Adams, second President of the United States. In the rear of the building is a large athletic field used in connection with the physical training of the women students.

The Homestead.—Girls majoring in Home Economics receive their Home Management practice in the Homestead. It is a remodelled colonial farmhouse newly equipped with all the modern conveniences of the home.

Bacteriology and Physiology Laboratory.—This building, erected in 1915, is especially designed to carry on work in Bacteriology as it relates to soil, industry, dairying, foods and public health. There are four class laboratories, several private laboratory rooms and offices and a lecture room. In addition there are incubator rooms, sterilizing rooms, hood rooms, washing rooms, inoculating rooms, weighing rooms, an animal room, a photographic and dark room, and a sub-basement refrigerator room. There is also a well-equipped library containing books and current periodicals useful in the conduct of bacteriological and physiological study.

Infirmary.—The Infirmary consists of two small cottages on the hillside east of the Bacteriology Laboratory. They are especially designed to care for sick or injured students. A trained nurse is on duty at all times.

Physics Building.—This is a wooden building erected in 1867. It contains a well-equipped laboratory for work in college Physics and also one lecture room.

Wilder Hall.—Here are located the departments for Landscape Architecture and Horticulture. The building is chiefly devoted to classrooms, drafting rooms, and offices. It was erected in 1905 and named in honor of Marshall P. Wilder, a pioneer in the movement for agricultural education in Massachusetts and one of the first trustees of the college.

Fisher Laboratory.—This is a well planned and equipped fruit packing and storage house. It includes six refrigerator rooms, four storage rooms not refrigerated, one large laboratory room, one class room besides ample storage space for fruit packages and equipment. The equipment for the building itself includes four types of apple sizers, packing tables and box and barrel presses of various types, besides all kinds of packages with smaller equipment necessary for thoroughly modern work in grading and packing fruit. This building is used by the Pomology Department and was named in honor of Jabez Fisher, one of the foremost, early horticulturists of the State. Erected 1910. Just east of Fisher Laboratory is the Horticultural Manufactures shed containing equipment for making cider, vinegar, and maple syrup.

French Hall.—French Hall houses the departments of Pomology, Floriculture, Forestry and Vegetable Gardening. The classroom work in Economics, Sociology, French and Spanish is also given here. Just to the rear of the building is the new Durfee range of greenhouses, devoted to the growing of carnations, roses, chrysanthemums, violets, etc. One house is maintained as a conservatory and contains a collection of plants used primarily for decorative purposes. An-

other house is devoted to greenhouse vegetables. The old Durfee range located just to the north of French Hall is used chiefly for the growing and maintenance of a collection of conservatory plants. There are also many of economic value such as the bamboo, camphor tree, guava, palm, etc. French Hall was erected in two sections; the first in 1908, the second in 1913. It was named in honor of Henry S. French, the first president of the college.

Clark Hall.—Here are located the offices, lecture rooms and laboratories of the Department of Botany. In addition to the main building, there is a greenhouse used for research and laboratory purposes. The herbarium contains about twenty thousand sheets of seed plants and ferns, twelve hundred sheets of liverworts and mosses and a collection of twenty-five thousand specimens of fungi. Erected in 1906 and named in honor of William S. Clark, president of the college 1867 to 1879.

Fernald Hall.—This building, erected in 1909, was named in honor of Professor Charles H. Fernald, who served the college for twenty-four years, built up a strong department in Zoölogy, created the department of Entomology, and acted as Director of the Graduate School. Fernald Hall houses the Department of Entomology, Zoölogy and Geology. In addition to laboratories, lecture rooms, and offices, there is a Geological Museum, a Zoölogical Museum and a collection of over 160,000 insects. Material in these collections is available for study and for exhibition purposes. In the basement is located the foods laboratory of the department of Home Economics.

Mathematics Building.—This is a small frame building containing classrooms for instruction in mathematics and surveying. There is also a well equipped drafting room, and a small one devoted to blue-printing.

Paige Laboratory.—The work in Veterinary Science is located in this building. In addition to the class, lecture, and laboratory rooms, there are the laboratories for the State Control and Research work on animal diseases. The museum contains a growing number of anatomical and pathological specimens, most of which are used for teaching purposes. In the rear of the building are the stables for housing both laboratory and larger animals under isolation conditions for dissection, post mortem examinations and for incineration purposes. Paige Laboratory was erected in 1898 and named for James B. Paige, professor of Veterinary Science from 1891 to 1922.

Physical Education Building.—This building dedicated at Commencement in 1931, offers splendid modern facilities for physical education including a swimming pool 75 by 30 feet, an exercise hall 150 by 180 feet, locker rooms, baths, hand ball court, and other modern facilities. Of the total cost of \$287,000, alumni and friends of the college contributed \$115,000; the remainder was appropriated by the State Legislature.

Drill Hall.—This building houses the Department of Military Science. It also contains locker and dressing rooms for women students and a large exercise hall for their work in physical education.

Alumni Field.—This tract of land was transformed into an Athletic Field, containing a baseball diamond, football field, and cinder track, by the Alumni and friends of the college. Completed 1915.

Memorial Hall.—The social center of student life is Memorial Hall. It was erected by the Alumni, students, faculty and friends of the college in memory of those men of this college who died in the World War. In the basement are bowling alleys, pool tables, a store, post office and barber shop. On the main floor are eight offices for the leaders of various student activities, a large reading room and a beautiful Memorial Room in which is found a tablet bearing the names of the sons of the college who gave their lives in the Great War. On the second floor is an auditorium seating 350 persons. This room is also used for college dances. Memorial Hall was erected in 1921.

Library.—The Library contains one of the best collections in agriculture and related sciences in the country, with especial strength in entomology, botany, chemistry, horticulture, landscape architecture, soil science and animal husbandry, but with considerable collections also in literature, history, economics and sociology. There are over 90,000 bound books, and over 50,000 classified pamphlets giving most recent information. The periodical file contains over 550 current magazines, both scientific and popular, and a careful

selection of newspapers, together with many periodical publications of learned societies. The Library is unusually rich in files of journals and proceedings of Experiment Stations and learned societies. The building is open on week days from 8 A.M. to 10 P.M., and from 1:30 to 4:30 and 7 to 9 P.M. on Sundays during terms, and with somewhat shorter hours during vacations and Summer School. The fine granite building was erected in 1885 and originally housed both College Chapel and Library.

Power Plant.—Heat and light are supplied to all the buildings on the campus from a central power plant. This was erected in 1902 and has been subsequently remodeled.

FARM BUILDINGS, LAND AND EQUIPMENT.

College Farm and Barns.—The college farm consists of 240 acres located just west of South College. Most of it is suitable for cultivation and is operated in regular rotation. Much of the farm as it now stands has been made productive by tile draining and clearing the land of brush and stumps. The principal crops raised are those which can be utilized by the livestock, together with some cash crops such as cabbage, carrots, potatoes, and hay. For instructional work the farm is available for study in field crops, planning of crop rotation, practical field operation of farm machinery and tractors and farm management. The livestock of the farm consists of about 165 head of registered cattle which are excellent representatives of the Ayrshire, Guernsey, Holstein, Jersey, Milking Shorthorns, and Hereford breeds, a considerable number of registered Berkshire and Chester White swine, a flock of about 100 Shropshire and Southdown sheep and 20 Percheron horses. These animals are used chiefly for demonstrational and instructional work in feeding and herd management and in the teaching of correct types by much practice in judging. The farm buildings are model structures for their various purposes. They were erected in 1909 and subsequently. The dairy barns contain efficient and modern equipment for their respective purposes. The sheep barns and piggery are located several hundred yards from the dairy barns.

Cavalry Stable.—This stable has a capacity for the sixty horses which are used by the M. S. C. Cavalry troop. This building is maintained by the Federal Government. Erected in 1925.

Poultry Plant.—The college poultry plant consists of about twenty acres of land in addition to the various buildings that go to make up a modern poultry plant. Although only eight acres of the land comprising the plant are college-owned this quantity permits for a three-year growing rotation. The plant will accommodate 2,000 laying birds and has growing facilities for about 7,000 chicks. The incubator capacity of the plant is approximately 12,000 eggs at one time. Located about one-half mile east of the college on East Pleasant Street, is the experimental poultry farm which accommodates about 1,200 adult birds and has hatching facilities for about 3,000 chicks. Here experiments on breeding poultry for egg production and disease control are carried on under strict quarantine.

The Hatch Barns.—These structures house the live stock which have been segregated from the main herd and flocks for the purpose of experimentation in connection with the subject of feed and feeding. Erected in 1891.

Experiment Station Barns.—These buildings contain the equipment and animals used in connection with the work of the Experiment Station.

Orchards and Vineyards.—The college orchard contains about 20 varieties of peaches, 25 of plums, 20 of pears, and 100 of apples. Common varieties of grapes are grown in the vineyards and with the various approved trellis systems. These orchards are used for teaching material in Pomology.

Vegetable Gardens.—Here are grown the class material used by the vegetable gardening department.

Mt. Toby Demonstration Forest.—This is an area of approximately 750 acres located on Mt. Toby. It contains the various types of forest growth found throughout the State. It serves as a field laboratory in forestry. Students have the privilege of working out problems in silviculture, forest mensuration and management. Improvement cuttings, cuttings for utilization and forest planning are conducted here also.

COURSES OF INSTRUCTION.

COURSES LEADING TO A DEGREE.

Four-Year Course.—The degree of Bachelor of Science is granted to those students who satisfactorily complete the regular four-year course. Special arrangement is made for some graduates of county agricultural schools to receive the degree Bachelor of Vocational Agriculture for four years of college work.

Five-Year Course in Landscape Architecture.—A five-year course is offered in Landscape Architecture leading to the degree of Bachelor of Landscape Architecture.

Graduate School.—The degrees of Master of Science, Master of Landscape Architecture and Doctor of Philosophy may be granted upon the completion of satisfactory study, research and a thesis.

Summer School.—Both graduate and undergraduate courses are offered in the six weeks' summer school and credits earned may apply toward the Bachelor's degree or advanced degrees.

NON-DEGREE COURSES.

Several short courses in agriculture are offered which do not lead to a degree. These are for the benefit of those who are not prepared to take the degree course or who desire only a practical training in modern agriculture methods.

Stockbridge School of Agriculture.—This is a two-year course in practical agriculture offering a high type of training to those who wish to enter some special agricultural enterprise. A separate descriptive catalogue will be sent on request.

Winter School.—A ten weeks' practical course in agricultural and horticultural subjects begins about January first each year. The courses are so arranged that a student may choose such subjects as will enable him to specialize in the line of work in which he is most interested.

HEALTH SERVICE.

The College endeavors to safeguard the health of all students while on the campus, and for this purpose maintains a Physician as Supervisor of Student Health, a resident registered nurse, and a small infirmary.

- 1) Physical examination by the Supervisor of Student Health is required of all undergraduate students annually, or oftener if indicated. This examination is given to freshmen during matriculation week. Entering women are also required to present an examination certificate from their family physician on forms supplied by the College.
- 2) The Supervisor of Student Health has offices in the Physical Education Building where he may be consulted during college hours.
- 3) Infirmary—Its purpose is to furnish a suitable place for professional attention in case of illness or accident. The out-patient clinic is held here daily.
- 4) Students are urged to consult the Supervisor of Student Health or the resident nurse at the first sign of physical disorder or for even minor accidents. Many severe illnesses and much lost time can be avoided by early or preventive treatment.
- 5) The infirmary charges will be at the rate of \$2 per day, and will be charged when one or more meals are obtained at the infirmary or when the student remains at the infirmary for one or more nights. A nominal charge may be made to out-patients for miscellaneous treatment of a minor character.
- 6) In addition to the fee charged as specified in paragraph 5, the following additional expenses will be charged to the patient.
 - (a) *Nurses.*—In case a special nurse is required for the proper care of an individual the services and board of this nurse will be paid by the patient. Such a nurse will be under the general supervision of the resident nurse.
 - (b) *Professional Service.*—If a student requires continuous medical attention by a physician, he may be required to select his physician and become responsible for fees charged by that physician.

- (c) *Supplies*.—Special medical supplies prescribed by a physician will be charged to the patient.
- (d) *Laundry*.—Expense for personal laundry incurred by students while in the infirmary will be charged to the individual student.

STUDENT EXPENSES.

Student college expenses vary from approximately \$450 per year to \$600 for the normal economical student. First year expenses are usually greater than those of the other three years and there is less opportunity in this year to earn. It is, therefore, recommended to the entering student that he have available at least \$450 with which to meet the expenses of the first year. Women students are recommended to plan on a minimum expense of \$550.

The following summary of a year's expenses includes only those items which are strictly college costs and does not include amounts for clothing, travel, etc., which vary with the individual. Tuition for residents of Massachusetts is \$60 and for others \$180.

	Low	Normal
Tuition (citizens of Massachusetts)	\$60.00	\$60.00
Matriculation fee (first year)	5.00	5.00
Room in college dormitory or in private house	70.00	140.00
Board, \$6.00 per week (College Dining Hall)	204.00	204.00
Laundry, 50 to 85 cents a week	18.00	30.00
General Laboratory fee	12.00	12.00
Health fee	4.50	4.50
Books, stationery and miscellaneous items	60.00	90.00
Student Taxes	30.00	30.00
	<u>\$463.50</u>	<u>\$575.50</u>

INITIAL PAYMENT FOR FRESHMEN.

The initial payment required of freshmen at the time of fall registration is approximately \$190 and is made up of the following items:

Tuition (citizens of Massachusetts)	\$30.00
Room rent (dormitory)	53.00
General laboratory fee	6.00
Matriculation fee	5.00
Health fee	2.50
Board (College Dining Hall to Dec. 1) (Approx.)	60.00
Military Uniform	18.50
*Student Government Tax	2.50
*Student Activities Tax	12.00
	<u>\$189.50</u>

GRADUATION REQUIREMENT.

No student will be graduated unless all bills due the college are paid on or before the Wednesday preceding the graduation exercise. If paid after that date and otherwise eligible he may graduate the following year.

Diplomas and letters of honorable dismissal will be withheld from all students who have not paid bills due the college or legitimate bills for room rent due from termities or private individuals.

ADVANCE PAYMENT.

Prospective new students will be expected to make an advance payment \$15 to the Treasurer of the College as soon as they are notified by the Dean that they are accepted for admission. This will be considered as first payment of registration fees which will be due at time of matriculation in September and will be returned to the student if he advises the College before August 20 that he will not present himself for admission. If the student fails to notify the College

* These taxes are for the support of student activities and entitle each student to free participation in the various enterprises which they represent.

Note

Change of Tuition and Fees

By action of the Board of Trustees, the following changes in tuition and fees will be effective September 1, 1933.

Tuition (citizens of Massachusetts)	\$100.00
" (citizens of other states)	220.00
The following fees are abolished:	
Matriculation fee (first year)	5.00
Health fee	4.50
General Laboratory fee	12.00

The above changes will apply to charges for all resident students of the College.



withdrawal before that date this preliminary payment will be forfeited and will be considered payment for the expenses involved in preliminary admission arrangements.

REFUNDS.

A student who leaves college for any reason before a semester is half completed will have refunded to him one-half the fees paid for that semester, except the matriculation fee; but one who leaves after a semester is half over will be allowed no rebate of fees and a refund of only unused board and room charges.

COLLEGE FEES.

Matriculation Fee. — All students entering the college for the first time as undergraduates are charged a matriculation fee of \$5 to cover the costs of matriculation.

Tuition. — Residents of Massachusetts are charged a tuition fee of \$60 per year, payable in advance in two installments of \$30 each on the first day of each semester. For those who are not residents of Massachusetts, the tuition fee is \$180 per year. Students entering from Massachusetts are required to file with the Treasurer a statement signed by town or city clerk, stating that the applicant's father or guardian is a legal resident of Massachusetts, unless applicant himself is of legal age, in which case a similar statement must be filed indicating his own legal residence.

General Laboratory Fee. — A fee of \$6 per semester is charged to cover the cost of laboratory materials used and incidental supplies for various courses.

Health Fee. — A fee of \$4.50 per year is charged to cover the cost of the student health service maintained by the College.

Military Uniform. — All students taking military drill are required to make a deposit of \$18.50 for the uniform. A rebate of \$15 is made when this uniform is returned.

BOARD.

All freshmen students and all residents of college dormitories are required to board at the college dining hall. Service is on a cafeteria basis and students pay in advance at the rate of six dollars per week, approximately, as follows:—

At the opening of college	\$60.00
At December 1	42.00
At the beginning of second semester	48.00
Upon return from spring recess	54.00

For absences of one week or more rebates at the rate of \$5.50 per week may be granted provided the absence is authorized by the Dean and the rebate approved by the Treasurer. No rebates will be allowed for absences of less than one week.

If a student's home is nearby and for this or any similar reason he is regularly absent from the campus over week ends, upon request from his parent or guardian, approved by the Dean of the College, he may board in the college dining hall for a five-day week (fifteen consecutive meals beginning with Monday breakfast) at the rate of 80 per cent of that paid for a seven-day week.

Excuses from compliance with these regulations concerning board shall be made only by the Treasurer of the College, who may require a recommendation in individual cases from the Student Health Officer, if the excuse is requested for health reasons, or from the Dean if the reason has to do with the student's academic opportunities.

Rooms.

All freshman students are expected to room in college dormitories unless excused by the Dean. Registration for freshman girls will be closed as soon as all available dormitory space has been assigned. Men students who cannot be accommodated in dormitories will be permitted to live in approved private homes. An application for a room cannot be filed until the student has been accepted for entrance. A \$15 deposit, made payable to the Treasurer of M. S. C., must accompany the application. In case of withdrawal before August 20, this will be refunded. As far as is feasible, rooms will be assigned in the order in which applications for the same are received. The student will be notified as soon as the assignment is made. Dormitory rooms rent for from \$42 to \$68 per semester.

Rooms for Men.—Dormitory accommodations are available for about one hundred and ten freshman men in North College and South College. The rooms are furnished except for necessary bedding or linen. They are cared for by the students who occupy them. Upper class men usually obtain rooms in private dwellings located near the campus. In most cases these rent for from \$2.50 to \$4 per week, depending somewhat on the location, and whether or not they are single or double. Such rooms are usually furnished. Students desiring aid in obtaining off campus rooms should write to the Assistant to the Dean. The College does not secure these rooms for the student but does keep a desirable list for student aid.

Rooms for Women.—Dormitory accommodations are available for about one hundred and five women students in the Abigail Adams House. These rooms are furnished except for necessary bedding or linen and are cared for by the students occupying them.

STUDENT EMPLOYMENT.

The College affords opportunity for part-time employment for a limited number of needy students. The number of applicants usually far exceeds the number of positions open so that no guarantee can be made that a student will find employment through the College. A faculty employment committee of which the Secretary of the College is chairman renders every possible assistance to deserving students in search of employment. Besides such opportunities on the campus as waiters and kitchen helpers at the dining hall, janitors for buildings, assistants on the farm and in college laboratories, there are some opportunities in private homes and businesses in the town.

Prospective students should be cautioned not to depend too much upon their earning capacity in the first year. This year is the most difficult to finance for two reasons. This is the student's first experience with college work and the usual result is that more time is required for study and less is therefore available for work. In this year also, since it is the first, the student is less familiar with his surroundings and not so able to locate work. Upper class men usually have most of the available jobs before the freshmen get acclimated. Students who are planning to enter college for the first time are therefore advised that they should have at least \$450 available with which to meet the expenses of the first year. Some students stay out of school for a year after graduating from high school in order to work and save this amount.

SCHOLARSHIPS.

Scholarships are awarded only to needy students of high character, whose habits of life are economical and who have maintained an average of at least 70% in their college course during the preceding year. Scholarships may also be granted to applicants for admission to the College provided they are candidates for a degree, are in need of financial assistance and are able to meet the entrance requirements in full. Complete information relative to the student's need for financial aid must be presented before any application can be acted upon. Scholarships are paid in installments at the beginning of each semester in the form of a credit on the student's bill for that term. A scholarship may be discontinued at the close of any semester if the scholastic record of the recipient is unsatisfactory.

Blanks for applying for a scholarship may be obtained from the Dean of the College. Applicants from the three upper classes must file at the Dean's Office before the close of the college year an account of their income and expenses for that college year together with a statement of their resources for the coming year. Prospective freshmen may file their applications at the time their entrance requirements are satisfied in full.

The following scholarships are available:

1. General scholarships:
 - a. Nineteen scholarships of \$60 each, known as the Porter L. Newton Scholarships.
 - b. One scholarship of \$60 known as the Mary Robinson Scholarship.
 - c. One scholarship of \$60 known as the Henry Gassett Scholarship.
 - d. One scholarship of \$60 known as the Whiting Street Scholarship.

2. Scholarships limited to students from Berkshire County:
 - a. At least ten scholarships of \$60 or more, known as the Frederick G. Crane Scholarships.
3. Scholarships limited to women students:
 - a. One scholarship of \$150, known as the Helen A. Whittier Memorial Scholarship.
 - b. One scholarship covering all college expenses of the freshman year, known as the Cotting Memorial Scholarship.
4. Scholarships limited to men students of Hampshire County:
 - a. Twenty-five scholarships of approximately \$100 known as the Wilbur H. H. Ward Scholarships.
5. Scholarships limited to students from Worcester:
 - a. Two scholarships of approximately \$250 each provided by a bequest from Mrs. Betsey Pinkerton.
6. Hood Dairy Scholarships:
 - a. Four scholarships of \$200 each for students of Dairying provided by the gift of Dr. Charles H. Hood.

LOANS.

Loans may be granted to needy students requiring some assistance in meeting the expenses of the college course. The student must present a properly endorsed note at the time a loan is made. Money thus loaned is at a low rate of interest until the student graduates or severs his connections with the college. Applications for a loan may be made at the Treasurer's Office.

These loans are made available through the income from the following funds:

Danforth Keyes Bangs Fund. — This is a gift of \$6,000 from Louisa A. Baker of Amherst, the income of which is to be used annually in aiding poor, industrious and deserving students to obtain an education in the Massachusetts State College.

Charles A. Gleason Fund. — This is a gift of \$5,000 from Charles A. Gleason of North Brookfield, Massachusetts, a trustee of the college from 1889 to his death, September 29, 1925.

Massachusetts Agricultural Club Fund. — The Massachusetts Agricultural Club has given \$500 to be used as a loan fund at the Massachusetts State College to help out deserving students there who intend to go into agricultural work.

4-H Club Loan Fund for Boys. — A loan fund of \$1,000.

4-H Club Loan Fund for Girls. — A loan fund of \$100.

Vincent Goldthwait Memorial Loan Fund. — A gift of \$5,000 from Dr. Joel E. Goldthwait in memory of his son.

SCHOLARSHIP HONORS AND AWARDS.

Honors Groups. — At the beginning of each semester a list is posted of those students who during the previous semester made a general average of 80 per cent or better. Three groups are recognized: those between 90 and 100; those between 85 and 90; and those between 80 and 85. Sophomores, Juniors and Seniors in the first two groups are allowed considerable freedom in the matter of class attendance.

General Honors Course. — High ranking Seniors who have maintained an average of 80 per cent throughout the college course are given the privilege of enrolling for a general honors course given during the second semester. Some outstanding instructor on the staff of the College or some other college is chosen to teach this. Since he has a group of selected senior students he is allowed the greatest freedom in the matter of course content and method of presentation.

Departmental Honors. — A student who has shown outstanding promise within some department and has maintained a general scholastic average of 80 per cent or better is permitted to apply for the privilege of registering for departmental honors. If his application is accepted by his department and the Honors Committee, he is allowed to pursue a course of independent study within the department of his choice throughout his senior year. This may include intensive reading, investigation or laboratory work in connection with some problem that he chooses for his consideration. The objective is to create on the

part of the student initiative, the power of independent investigation and to develop in him the spirit of research. Although the student is responsible for his undertaking he is encouraged to consult with his department in regard to his work should the need arise. At the close of his study the student presents a thesis covering his investigation. In addition he may be required to appear for an oral or written examination. If by the excellence of his work he satisfies all the requirements of his department and the Honors Committee his name will appear on the commencement program as receiving honors in the field of his specialization.

Phi Kappa Phi Elections.—Those members of the senior class whose scholarship average has been 85 or above are eligible for election to the Honorary Scholarship Society of Phi Kappa Phi. Not more than 15 per cent of the class can be elected, however.

SCHOLASTIC PRIZES.

Phi Kappa Phi Award for Scholarship.—Massachusetts Chapter of the Phi Kappa Phi Honorary Scholarship Society offers an award of \$100 for outstanding work in scholarship. This is given to some member of the Senior class at the opening of college in the fall. The award is based on the record of the first three years.

The Grinnell Prizes.—Given by the Hon. William Claflin of Boston, in honor of George B. Grinnell, Esq., of New York, for excellence in theoretical and practical agriculture. The contest is open to those senior students whose records on the registrar's books show an average standing of 80 or above for the technical work taken in the Divisions of Agriculture and Horticulture during the junior and senior years. There are three prizes of \$25, \$15, and \$10.

The Burnham Prizes.—These were made possible through the generosity of Mr. T. O. H. P. Burnham of Boston. Prizes of \$15 and \$10 are awarded to those students delivering the best and second best declamations in the Burnham contest. The preliminary contests are open under certain restrictions to freshmen and sophomores.

The Flint Prizes.—The Flint Oratorical Contest was established in 1881 by a gift of the late Charles L. Flint, a former president of the college. After his death the prizes were continued by college appropriation. Prizes of \$30 and \$15 are awarded as first and second prizes to those two students delivering the best orations in this contest.

The Hills Botanical Prize.—This is given through the generosity of Henry F. Hills of Amherst, for the first and second best herbaria. Competition is open to members of the senior, junior and sophomore classes. First prize \$20, second prize \$15.

The Betty Steinbugler Prize in English.—This prize of \$10 was endowed by John L. Steinbugler, New York City, in honor of his daughter Elizabeth Steinbugler Robertson, a graduate of this College in the Class of 1929. It is awarded annually to a woman in the junior or senior class who has written the best long paper on a subject of literary investigation in a course in English during the year.

ATHLETIC AND ACADEMICS PRIZES.

The Allan Leon Pond Memorial Medal.—This medal is awarded for general excellence in football in memory of Allan Leon Pond of the class of 1920, who died February 26, 1920. He was a congenial companion, a devoted lover of Alma Mater, a battle-scarred, though youthful, veteran of the Great War, a fine all round athlete and a true amateur. He would rather win than lose, but he would rather play fair than win. He has been characterized as a typical student of this College.

The Southern Alumni Baseball Cup.—This cup is awarded to that member of the baseball team who contributes most to the success and reputation of the team, both in respect to skill and spirit.

The Thomas E. Minkstein Memorial Award.—This award is made by the Class of 1931 in memory of their classmate who died July 16, 1930, while he was captain-elect of football. The award is given to one of the outstanding men in

the Junior Class who has nearly as possible attained those standards of athletics, scholarship and leadership set by him whose memory this award honors.

The George Henry Richards Memorial Cup.—This cup is awarded annually to the member of the basketball team who shows the greatest improvement in leadership, sportsmanship, and individual and team play during the season. It is in memory of George Henry Richards of the Class of 1921 who died suddenly while a student at the College.

Academics Conspicuous Service Trophy.—This trophy is awarded to that student who during the past 12 months has made the most important, single contribution to the Academic Activities.

Academics Managers' Prize.—Fifty dollars in gold awarded annually to that Academics manager who fulfills his duties most efficiently.

Poetry Prize.—Twenty-five dollars awarded to the author of the best poem published in the *Collegian* during the year.

STUDENT ACTIVITIES AND ORGANIZATIONS.

No small part of the value received from four years of college is the training that one acquires through participation in student activities. Student organizations offer excellent opportunities for leadership in a wide variety of fields.

STUDENT GOVERNMENT.

The Senate.—This is a student governing council. It is composed of representatives elected from the Junior and Senior classes. Besides acting as general director of undergraduate conduct it represents the interests of the students and the student body before the Faculty.

Adelphia.—This is a senior honorary society. The members are usually chosen from those who have been prominent in college activities. The society attempts in a quiet, unassuming way to mold student life on the campus.

The Honor Council.—The Honor System prevails at this college. The foreword of the Honor System reads as follows: "We, the students of the Massachusetts State College, believe that the goal of education is character. The man of character deals fairly with himself, and with others, and would rather suffer failure than stoop to fraud. The Honor System stands for this attitude in all relations of the students with the Faculty. In expression of our belief we pledge ourselves to the support of the constitution of the Honor System." Matters pertaining to the Honor System are in direct charge of the Student Honor Council, consisting of members elected from the four classes.

The Women's Student Council.—All appropriate matters pertaining to the conduct of women students are under the control of this council. It is composed of members selected from the senior, junior, and sophomore classes by all the women students.

ACADEMIC ACTIVITIES.

The College Musical Clubs include an orchestra, a band, and a mixed chorus. These make various appearances during the year, both in Amherst and on tour.

The Dramatic Club, the Roister Doisters, presents annually a revue and two plays, one in connection with the Junior Promenade, and the other at Commencement. There is a Debating Society which conducts both class and inter-collegiate debates. All academic activities are supervised by the Academic Activities Board composed of alumni, faculty, and students, and find recognition in semi-annual awards of gold and silver medals.

"The Massachusetts Collegian" is a weekly newspaper, published by the undergraduates of the college.

"The Index" is the college yearbook published by the members of the Junior class.

COLLEGE FRATERNITIES.

There are several national and local fraternities represented on the campus. Rushing rules and general matters dealing with fraternity life are in charge of the Inter-fraternity Conference. This conference awards scholarships, a baseball cup, and a relay plaque to the winners of the Inter-fraternity Contests.

INTER-COLLEGIATE ATHLETICS.

The College is represented in inter-collegiate athletics by teams in all the

leading sports, including football, baseball, track, hockey, and basketball. General policies governing athletics are in charge of the Athletic Board, composed of Alumni, Faculty, and students.

PROFESSIONAL CLUBS.

There are several professional clubs established in connection with the major work of the college. Included among these is an Animal Husbandry Club, Landscape Art Club, Pomology Club, Agricultural Economics Club, and Floricultural Club.

RELIGIOUS ORGANIZATIONS.

The Young Men's Christian Association and the Young Women's Christian Association are active both on the campus and off. In addition there is a Catholic Club, and a Jewish Menorah Society. The Cosmopolitan Club has as its object the cultivation of peace and the establishment of strong international friendship.

THE SOCIAL UNION.

The Social Union was established in 1907. All students become members of the Union in consideration of a small part of the Student Activities Fee. In the fall and winter months the Union gives a series of entertainments.

STANDARDS OF DEPORTMENT.

The customary high standard of college men and women in honor, manliness, self-respect and consideration for the rights of others constitutes the standards of student deportment.

The privileges of the college may be withdrawn from any student at any time, if such action is deemed advisable.

It should be understood that the college, acting through its president or any administrative officer designated by him, distinctly reserves the right, not only to suspend or dismiss students, but also to name conditions under which students may remain in the institution. For example, if a student is not doing creditable work he may not only be disciplined but he may also be required to meet certain prescribed conditions in respect to his studies, even though under the foregoing rules his status as a student be not affected. The same provision applies equally to the matter of absences ("cuts"). According to the rules a student is allowed a certain percentage of absences from class and other exercises. This permission, which implies a privilege and not a right, may be withdrawn at any time for any cause.

Similarly, also, it applies to participation in student activities. Though this will ordinarily be governed by the rules as already laid down, yet if, in the judgment of the college authorities, a student is neglecting his work on account of these activities, the privilege of participating in them may be withdrawn for such time as is considered necessary. Moreover, it may be withdrawn as a punishment for misconduct. Prospective students or their parents may, upon application, obtain a copy of the faculty rules governing student relations to the college.

FRESHMAN REGISTRATION.

All members of the incoming freshman class are required to be in residence on the campus for the period September 18 to September 23, 1933, inclusive. This period is known as Freshman week. During this week will be given the several psychological examinations and tests required of freshmen. In addition physical examinations will be given to the men students. Such matters as pertain to schedule and section assignments will be taken care of at the same time. Lectures on student activities, college customs, and college curriculum will be given also. The object of this week is to introduce the new student into the college, so that only the minimum amount of time will be lost when the actual studies begin.

Admission to Collegiate Courses.

A. APPLICATION FOR ADMISSION.

Correspondence concerning admission should be addressed to the Dean's office.

Every applicant for admission to the college must be at least sixteen years old, and must present to the Dean proper testimonials of character, which, whenever possible, should come from the principal of the school at which the applicant has prepared for college. All applications for admission should be received at the Dean's Office on or before June first of the year in which the candidate expects to enroll. Blanks for such application may be obtained by addressing the Dean of the college. All entrance credentials must be in the hands of the Dean before the applicant can matriculate.

B. MODES OF ADMISSION.

Students are admitted to the freshman class either upon certificate or upon examination. No *diploma* from a secondary school will be accepted.

CERTIFICATES.—The Massachusetts State College is affiliated with the New England College Entrance Certificate Board. Therefore certificates of admission will be accepted from schools approved by the Board. Certificates of admission will also be accepted from any Massachusetts school listed as class "A" by the State Department of Education, but not included in the approved list of the New England College Entrance Certificate Board. Principals of schools in New England who desire the certificate privilege should address the secretary of the Board, Professor Frank W. Nicolson, Wesleyan University, Middletown, Conn. Certificates from schools outside of New England may be received if those schools are on the approved list of the leading colleges of the section in which the school in question is located.

The credentials of the Board of Regents of the State of New York are accepted as satisfying the entrance requirements of this college when offered subject or subject, provided the grades are satisfactory.

Certificates in order to be accepted must present in the prescribed and restrictive elective groups at least three of the necessary fourteen and one-half units. It is to be understood, however, that responsibility for certification in either elementary French, elementary German, English 1 or English 2, Latin A, Greek A or Algebra, must be assumed by one school, if the candidate has received his preparation in any one subject named above in more than one school. Subjects lacking on certificate must be made up at the time of the examinations for admission. Conditions to the amount of two units will be allowed.

Blank forms for certification—sent to principals or school superintendents only—may be obtained on application to the Dean of the college.

SPECIAL CERTIFICATE ARRANGEMENT FOR STUDENTS FROM AGRICULTURAL SCHOOLS.—Superior graduates of Vocational Schools of Agriculture in Massachusetts and Vocational Agricultural Departments in Massachusetts High Schools may be accepted for the Degree of Vocational Agriculture provided:—

(a) they are unqualifiedly recommended by the Vocational Division of the Department of Education as *bona fide* Vocational Graduates with superior rank; and

(b) that they can present at least 14½ units of certified entrance, approved as to quality and quantity by the State Department of Vocational Education.

ADMISSION BY FOUR COMPREHENSIVE EXAMINATIONS.—By this plan a candidate's qualifications for admission will be based upon the following considerations:

(a) **SCHOOL RECORD:** A candidate must present to the Committee on Entrance a complete transcript of his secondary school course giving the subjects and the grades for the four years previous to college entrance, and a confidential estimate of character, personality, and promise of ability to do college work from the school principal. This should be sent to the Dean not later than May 1. The Committee must give its permission before the applicant may take the examinations.

(b) The following comprehensive examinations must be taken unless for satisfactory reasons the Committee allows a substitution for 4:—

- | | |
|-----------------------|-------------|
| 1. English | three units |
| 2. Mathematics | three units |
| 3. History | one unit |
| 4. A foreign language | two units |

These must be the College Entrance Examination Board Plan B examination given in June. A candidate under this plan will be admitted without condition refused admission. In the event that a substitution is allowed for foreign language the student must take at least one year of modern language in college without receiving college credit therefor.

C. EXAMINATIONS.

Entrance examinations for admission to the Massachusetts State College will be held at the following centers:—

In June Amherst, Stockbridge Hall, room 114.
Cambridge, Massachusetts Institute
Technology, Massachusetts Ave. entrance

In September Amherst, Stockbridge Hall, room 114.
Please note that September examinations are held in Amherst only.

Schedule for Entrance Examinations June 15-17, 1933.

First Day.

- 8.30 A.M. Algebra.
10.30 A.M. Chemistry.
2.00 P.M. History (ancient, medieval and modern, English, United States and Civics).

Second Day.

- 8.30 A.M. English 1 and 2.
11.30 A.M. Botany and Biology.
2.00 P.M. Plane Geometry.
3.30 P.M. Physics.

Third Day.

- 8.30 A.M. French, German, Spanish, required and elective.
1.00 P.M. Latin, elementary, intermediate and advanced, and all one-half credit electives, except those already noted.

Schedule for Entrance Examinations September 13-16, 1933.

First Day.

- 2.15-5.00 P.M. Greek, elementary and intermediate.

Second Day.

- 8.30 A.M. Algebra.
10.30 A.M. Chemistry.
2.00 P.M. History (ancient, medieval and modern, English, United States and Civics).

Third Day.

- 8.30 A.M. English 1 and 2.
11.30 A.M. Botany and Biology.
2.00 P.M. Plane Geometry.
3.30 P.M. Physics.

Fourth Day.

- 8.30 A.M. French, German, Spanish, required and elective.
1.00 P.M. Latin, elementary, intermediate and advanced, and all one-half credit electives, except those already noted.

D. REQUIREMENTS FOR ADMISSION.

The requirements for admission are based on the completion of a four-year high school course or its equivalent and are stated in terms of units. A unit is the equivalent for at least four recitations a week for a school year.

Fourteen and one-half units must be offered for admission in accordance with the entrance requirements outlined below. In some instances students are allowed to enter conditioned in not more than two units.

Entrance Requirements.

1. *Prescribed.*—The following units are required:—

Algebra	1½
Plane Geometry	1
English 1 (Grammar and Composition)	2
English 2 (Literature)	1
History	1
A foreign language	2
	8½

2. *Restricted electives.*—From two to six units selected from the following subjects:—

Mathematics and Science.

Solid Geometry	½
Trigonometry	½
Biology	1
Botany	½ or 1
Chemistry	1
Geology	½
Physical Geography	½
Physics	1
Physiology	½
Zoölogy	½

History.

Ancient	1
English	1
Medieval and Modern	1
United States and Civics	1

Foreign Language.

Elementary French	2
Elementary German	2
Elementary Spanish	2
Elementary Latin	2
Elementary Greek	2
Intermediate French	1
Intermediate German	1
Intermediate Spanish	1
Intermediate Latin	1
Intermediate Greek	1
Advanced French	1
Advanced German	1
Advanced Spanish	1
Advanced Latin	1

3. *Free margin electives*—not over four units. In case fourteen and one-half units cannot be presented in the prescribed and restricted elective groups, units not to exceed four may be offered as free margin electives. Credit in the free margin will be allowed for any substantial courses (agriculture, general science

and fourth year English included) not listed under the prescribed and restricted elective groups for which credit of not less than one-half unit earned in one year is given toward a secondary school diploma. Since no entrance examinations are given in these subjects they may be offered only on certificate.

E. OTHER INFORMATION ABOUT ENTRANCE.

1. If elementary algebra and plane geometry are counted as three units the total requirement for admission will be fifteen.

2. Both the credits under the prescribed and restricted elective groups must be presented either by certificate from an approved school or by examination or by a combination of both. Credit by certificate will not be accepted unless at least three units are offered.

3. Candidates are allowed to spread their entrance examinations over the three consecutive periods just previous to their entrance into college. A period means June to September of the same year.

4. Examinations for the removal of entrance conditions will be held during the second week of January.

5. All entrance conditions must be satisfied before a student is permitted to enter upon the work of the sophomore year.

6. The privileges of the college may be withdrawn from any student at any time if such action is deemed advisable, regardless of whether entrance was gained by certificate or examination.

7. The passing grade for an entrance examination is 60 per cent.

F. ADMISSION TO ADVANCED STANDING.

A student desiring to transfer to this college from another of recognized standing must present the following credentials: —

1. A letter of honorable dismissal from the institution with which he has been connected.

2. A statement or certificate of his entrance record.

3. A statement from the proper officer showing a complete record of his work while in attendance.

4. A marked catalogue showing the courses pursued.

5. A statement from the proper officer, giving the total number of credits required for graduation by the institution from which the applicant is transferring, and, of this total, the number that the applicant has satisfactorily completed at the time of the transfer.

The above credentials must be sent directly from the Registrar's office of the college from which the student is transferring. They should be addressed to the Dean of the Massachusetts State College. Applications will be judged wholly on their merits. The college may prescribe additional tests before accepting applicants or determining the standing to be granted them.

At least one year's work in residence is required of any student desiring to be recommended for the Bachelor of Science degree.

G. STATEMENT OF PREPARATION REQUIRED FOR ADMISSION

AGRICULTURE.

Entrance credit in agriculture is granted on the following basis: —

I. The Massachusetts State College accepts a maximum of four units in agriculture (except as described on page 33) from any secondary or county agricultural high school offering work in that subject, provided evidence of such work having been done is submitted on a principal's statement, as is indicated in the "free margin" group.

II. In high schools organizing agricultural club work under the supervision and rules of the junior extension service of the college, one credit is granted for each full year of work performed under the following plan: —

Work of the Winter Term. — (a) The study of textbooks such as are suitable for secondary school instruction in agriculture.

(b) Course of study: A general outline of suggested topics for study.
 (c) Visits by a representative of the Massachusetts State College for observation, counsel and advice in regard to kind and amount of work being done in agriculture.

(d) Formation of an agricultural club with officers from among its own members, meeting once a month under local supervision of someone authorized to act for the school authorities.

Work of the Spring Term.—Same in general form as winter term.

Work of Summer Term.—An approved project conforming to the rules of some one or more of the agricultural clubs of the junior extension service of the Massachusetts State College.

Work of the Fall Term.—(a) An exhibit of work.

(b) Reports and story of achievement submitted to the junior extension service of the college.

BIOLOGY.

The entrance examination in biology will cover the work outlined by the College Entrance Examination Board. This work should extend through one full year and include both laboratory and textbook study. The requirements are met by Hunter's *Civic Biology* and similar texts.

BOTANY.

For one unit of credit in botany, the work outlined in the statement of requirements issued by the College Entrance Examination Board, or its equivalent, will be accepted. This work should occupy one school year and include laboratory and supplementary textbook study. For one-half unit of credit, work that covers the same ground but occupies half the time required for a full unit of credit will be accepted. These requirements are met by such texts as Stevens' *Introduction to Botany* and Bergen & Davis' *Principles of Botany*. A notebook, containing clear, accurate drawings and descriptive records forms part of the requirement for either the half-unit or the one-unit credit. The careful preparation of an herbarium is recommended to all prospective students of this college, although the herbarium is not required.

CHEMISTRY.

The entrance examination in chemistry will cover the work outlined by the College Entrance Examination Board as preparatory for college entrance. In general, this consists of a year of high school chemistry from any standard textbook, with laboratory work on the properties of the common elements and their simpler compounds. No particular work is prescribed. The keeping of a notebook is required.

Students who do not take chemistry in the preparatory school begin the subject in college.

MATHEMATICS.

(a) *Required.*—Algebra: The four fundamental operations for rational algebraic expressions; factoring; determination of highest common factor and lowest common multiple by factoring; fractions, including complex fractions; ratio and proportion; linear equations, both numerical and literal, containing one or more unknown quantities; problems depending on linear equations; radicals, including the extraction of the square root of polynomials and numbers; exponents, including the fractional and negative; quadratic equations, both numerical and literal; simple cases of equations with one or more unknown quantities that can be solved by the methods of linear or quadratic equations; problems depending on quadratic equations; the binomial theorem for positive integral exponents, the formulas for the n th term and the sum of the terms of arithmetic and geometric progressions, with applications.

Plane Geometry: The usual theorems and constructions of good textbooks, including the general properties of plane rectilinear figures; the circle and the measurement of angles; similar polygons; areas; regular polygons and the measurement of the circle; the solution of numerous original exercises, including loci problems; applications to the mensuration of lines and plane surfaces.

(b) *Elective*.—Solid Geometry: The usual theorems and constructions of good textbooks, including the relations of planes and lines in space; the properties and measurement of prisms, pyramids, cylinders and cones; the sphere and spherical triangle; the solution of numerous original exercises, including loci problems; applications to the mensuration of surfaces and solids.

Plane Trigonometry: A knowledge of the definitions and relations of trigonometric functions and of circular measurements and angles; proofs of the principal formulas and the application of these formulas to the transformation of the trigonometric functions; solution of trigonometric equations, the theory and use of logarithms, and the solution of right and oblique triangles.

PHYSICS.

To satisfy the entrance requirement in physics, the equivalent of at least one unit of work is required. This work must consist of both classroom work and laboratory practice. The work covered in the classroom should be equal to that outlined in Hall & Bergen's *Textbook of Physics* or Millikan & Gale; the laboratory work should represent at least thirty-five experiments involving careful measurements, with accurate recording of each in laboratory notebook.

PHYSIOLOGY.

Hough & Sedgwick's *The Human Mechanism*; Martin's *The Human Body*; Briefer Course.

ZOOLOGY, PHYSICAL GEOGRAPHY, GEOLOGY.

The following suggestions are made concerning preparation for admission in the subjects named above:—

For physiography, Davis' *Elementary Physical Geography*; Gilbert & Brigham's *Introduction to Physical Geography*. For zoology, textbooks entitled *Animals* or *Animal Studies*, by Jordan, Kellogg and Heath; Linville & Kelley's *A Textbook in General Zoology*. For geology, A. P. Brigham's *A Textbook of Geology* or Tar's *Elementary Geology*.

Examination in these subjects will be general in recognition of the different methods of conducting courses; but students will be examined on the basis of the most thorough secondary school courses.

HISTORY.

The required unit must be offered in either ancient history, medieval and modern history, English history, or United States history and civics. Either one, two or three elective units in any of the historical subjects here named may be offered, provided that no unit be offered in the same subject in which the required unit has been offered.

Preparation in history will be satisfactory if made in accordance with the recommendations of the committee of seven of the American Historical Association, as outlined by the College Entrance Examination Board. The examination will require comparisons and the use of judgment by the candidate rather than the mere use of memory, and it will presuppose the use of good textbooks, collateral reading and practice in written work. Geographical knowledge may be tested by requiring the location of places and movements on outline maps.

To indicate in a general way the character of the textbook work expected, the texts of the following authors are suggested: Botsford, Morey or Myers, in ancient history (to 814 A.D.); Adams, West or Myers, in medieval history; Montgomery, Larned or Cheyney, in English history; Fiske, together with Muzzey and West, in United States history and civics.

ENGLISH.

The study of English in school has two objectives of equal importance: first, the ability to use the English language, in both speech and writing, clearly, correctly and effectively; and, second, the ability to read English literature with understanding and appreciation.

(1) *Grammar and Composition* (Two Units).—The first objective makes necessary a rigorous and reiterated instruction in grammar and composition, with special emphasis upon: spelling, sentence structure, punctuation and para-

graph development. College freshmen are found deficient particularly in these fundamental phases of rhetoric.

(2) *Literature* (One Unit).—The second objective is sought by means of two lists of books, designated as *Books for Reading* and *Books for Study*, from which may be selected material for a progressive, four-year course in literature. The student should be trained to read aloud, to memorize significant passages, to associate the books with their historic background and to have well in hand both content and structure. He should be prepared for general examination on the former list and detailed examination on the latter. However accurate in subject matter, no paper will be considered satisfactory if seriously defective in punctuation, spelling or other essentials of good usage.

LISTS OF BOOKS FOR 1932-1933.

1. *Books for Reading.*

From each group two selections are to be made, except that for any book in Group V a book from any other may be substituted.

Group I.

Cooper: *The Last of the Mohicans*.
 Dickens: *A Tale of Two Cities*.
 George Eliot: *The Mill on the Floss*.
 Scott: *Ivanhoe* or *Quentin Durward*.
 Stevenson: *Treasure Island* or *Kidnapped*.
 Hawthorne: *The House of the Seven Gables*.

Group II.

Shakespeare: *The Merchant of Venice*, *Julius Caesar*, *King Henry V*, *As You Like It*, *The Tempest*.

Group III.

Scott: *The Lady of the Lake*.
 Coleridge: *The Ancient Mariner*; and Arnold: *Sohrab and Rustum*.
 A collection of representative verse, narrative and lyric.
 Keats: *Idylls of the King* (any four).
 The *Aeneid* or *The Odyssey* in a translation of recognized excellence, with the omission, if desired, of books I-V, XV and XVI of *The Odyssey*, or the *Iliad* with the omission, if desired, of books XI, XIII, XV and XXI.
 Longfellow: *Tales of a Wayside Inn*.

Group IV.

The *Old Testament* (the chief narrative episodes in Genesis, Exodus, Joshua, Judges, Samuel, Kings and Daniel, together with the books of Ruth and Esther).
 Irving: *The Sketch Book* (about 175 pages).
 Addison and Steele: *The Sir Roger de Coverley Papers*.
 Macaulay: *Lord Clive* or *History of England*, Chapter III.
 Franklin: *Autobiography*.
 Emerson: *Representative Men*.

Group V.

A modern novel.
 A collection of short stories (about 150 pages).
 A collection of scientific writings (about 150 pages).
 A collection of prose writings on matters of current interest (about 150 pages).
 A selection of modern plays (about 150 pages).
 All selections from this group should be works of recognized excellence.

2. *Books for Study.*

One selection is to be made from each of groups I and II, and two from Group III.

Group I.

Shakespeare: *Macbeth*, *Hamlet*.

Group II.

Milton: *L'Allegro, Il Penseroso*, and either *Comus* or *Lycidas*.

Browning: *Cavalier Tunes, The Lost Leader, How They Brought the Good News from Ghent to Aix, Home Thoughts from Abroad, Home Thoughts from the Sea, Incident of the French Camp, Hervé Riel, Pheidippides, My Last Duchess, Up at a Villa — Down in the City, The Italian in England, The Patriot, The Pied Piper, De Gustibus, Instans Tyrannus, One Word More*

Group III.

Burke: *Speech on Conciliation with America*.

Macaulay: *Life of Johnson*.

Lowell: *Democracy*.

Lincoln: *Speech at Cooper Union, his Farewell to the Citizens of Springfield, his brief addresses at Indianapolis, Albany and Trenton, the speeches in Independence Hall, the two Inaugural Addresses, the Gettysburg Speech, and his Last Public Address, together with a brief memoir or estimate of Lincoln*.

Carlyle: *Essay on Burns*, with a brief selection from Burns's poems.

FRENCH.

Elementary: The necessary preparation for this examination is stated in the description of the two-year course in elementary French recommended by the Modern Language Association, contained in the definition of requirements of the College Entrance Examination Board.

Third and fourth year French (elective subjects for admission). — For a third unit in French as an elective subject for entrance, the work heretofore described by the College Entrance Examination Board as "intermediate" is expected. For a fourth unit, the work described as "advanced" is expected.

No examination for a third unit in French will be given unless the candidate has presented elementary French on certificate, or has written the examination in elementary French.

No examination for a fourth unit in French will be given unless the candidate has presented both elementary and intermediate French upon certificate, or has written the examination in both elementary and intermediate French.

GERMAN.

Elementary: The entrance requirements in German conform to those of the College Entrance Examination Board for elementary German (the standard two-year requirements).

Third and fourth year German (elective subjects for admission). — For third unit in German as an elective subject for entrance, when required unit have been offered in German, the work heretofore described by the College Entrance Examination Board as "intermediate" is expected. For a fourth unit, the work described as "advanced" is expected.

No examination for a third unit in German will be given unless the candidate has presented elementary German upon certificate, or has written the examination in elementary German.

No examination for a fourth unit in German will be given unless the candidate has presented both elementary and intermediate German upon certificate, or has written the examination for both elementary and intermediate German.

SPANISH.

Elementary: The necessary preparation for this examination is stated in the description of the two-year course in elementary Spanish recommended by the Modern Language Association, contained in the definition of requirements of the College Entrance Examination Board.

Third and fourth year Spanish (elective subjects for admission). — For a third unit in Spanish as an elective subject for entrance, the work heretofore described by the College Entrance Examination Board as "intermediate" is expected. For a fourth unit, the work described as "advanced" is expected.

No examination for a third unit in Spanish will be given unless the candidate has presented elementary Spanish on certificate, or has written the examination in elementary Spanish.

No examination for a fourth unit in Spanish will be given unless the candidate has presented both elementary and intermediate Spanish upon certificate, or has written the examination in both elementary and intermediate Spanish.

GREEK.

Elementary — Greek grammar and composition: Translation into Greek of short sentences illustrating common principles of syntax.

The examination in grammar and prose composition will be based on the first four books of Xenophon's *Anabasis*.

Intermediate: Homer's *Iliad*, Books I and II (omitting Book II, 494 to end), and the Homeric forms, constructions, idioms and prosody.

Prose composition, consisting of continuous prose based on Xenophon, and other Attic prose of similar difficulty.

Translation of passages of Homer at sight.

The examinations in Greek, elementary and intermediate, will be given in September only.

LATIN.

Elementary: Two credit units will be allowed if satisfactory proficiency is shown (including grammar) in (a) the translation of a passage or passages taken from Caesar's *Gallie War*, covering at least four books, and (b) the translation of passages of Latin prose at sight.

Intermediate: Cicero (third oration *Against Catiline* and the orations *For Archias* and *For Marcellus*) and sight translation of prose.

Advanced: Virgil (*Æneid*, II, III and VI) and sight translation of poetry.

Collegiate Course of Instruction.

The course of study consists of four years of work planned to provide scientific foundation, cultural background, and professional training, and leads to the degree of Bachelor of Science (B.S.). The following five different major lines of specialization are provided: Agriculture; Horticulture; Home Economics; the Physical and Biological Sciences; and the Social Sciences.

FRESHMAN YEAR.

The work of the freshman year consists of definitely required subjects, most of which are identical for all students, in order to insure a uniform preparation in the more fundamental collegiate subjects. However, some differentiation is required in order to properly introduce each student to some major line of work in which he may find his professional interest, and major faculty contacts. This course is presented below in tabular form.

TABLE OF FRESHMAN SUBJECTS.

(Groups A and C of each semester are required of all freshman men; Group A and D of all freshmen women; and one of the options of Group B must be selected by each freshman to complete his year's program of study.)

Group	First Semester	Cr.	Second Semester	Cr.
A	English 1	3	English 2	3
	Mathematics 1†	3	Mathematics 2†	3
	Chemistry 1 or 3	4	Chemistry 2 or 4 or	
	Orientation 1	2	Orientation 2	3
			Botany 2	4
B	AGRICULTURE divisional electives			
	Agronomy 1	3	Agricultural Engineering 2	3
	II HOME ECONOMICS divisional electives			
	Home Economics 1	3	Home Economics 2	3
	III HORTICULTURE and LANDSCAPE ARCHITECTURE divisional electives			
	Horticulture 1	3	Agronomy 2	3
	IV PHYSICAL and BIOLOGICAL SCIENCE divisional electives			
	French 1 or 5	3	French 2 or 6	3
	German 1 or 5	3	German 2 or 6	3
	V SOCIAL SCIENCE divisional electives			
C	French 1 or 5	3	French 2 or 6	3
	German 1 or 5	3	German 2 or 6	3
	Military 1	2	Military 2	2
	Physical Education 3	1	Physical Education 4	1
D	Physical Education 1	1		
	Freshman Course 5	1	Freshman Course 6	2
	Physical Education 7	2	Physical Education 8	2
	Physical Education 1	1		

† French or German is optional for Mathematics for students who intend to specialize in Home Economics.

SOPHOMORE YEAR.

The work of the sophomore year is also largely prescribed in order to insure as broad a cultural background as possible in preparation for the more specialized training of the last two years. Under the guidance of a major group advisory committee the student begins in this year certain optional choices of electives leading to the special courses of major work which he will later pursue. This course is presented below in tabular form.

TABLE OF SOPHOMORE SUBJECTS.

(Groups A and C are required of all sophomore men; Groups A and D of all sophomore women; and two of the electives of Group B must be selected by each sophomore, with the approval of his major group advisory committee.)

Group	First Semester	Cr.	Second Semester	Cr.
A	English 25 and 29	3	English 26 and 30	3
	Economics 25	3	History 30	3
	Zoölogy 25 or Physics 25	3	Physiology 32 or Physics 26	3
B	I AGRICULTURE divisional electives			
	Dairy 25 or Poultry 25	3	Animal Husbandry 26	3 or 4
	Bacteriology 31	3	Chemistry 30	3
	Mathematics 27	3	Mathematics 28	3
	Chemistry 25	3	Chemistry 26	3
	II HOME ECONOMICS divisional electives			
	Home Economics 25	3	Home Economics 30	3
	Drawing 31	3	Home Economics 32	3
			Chemistry 30	3
	III HORTICULTURE and LANDSCAPE ARCHITECTURE divisional electives			
	Olericulture 25	3	Pomology 26	3
	Drawing 25	3	Drawing 26	3
	Botany 25	3	Entomology 26	3
			Floriculture 26	3
			Horticulture 26	3
	IV PHYSICAL and BIOLOGICAL SCIENCE divisional electives			
	Mathematics 25	3	Geology 28	3
	Mathematics 27	3	Mathematics 28	3
	Physics 25	3	Physics 26	3
	Chemistry 25	3	Chemistry 26	3
	Zoölogy 25	3	Zoölogy 26	3
	Bacteriology 31	3	Physiology 32	3
	Botany 25	3	Chemistry 30	3
			Entomology 26	3
	V SOCIAL SCIENCE divisional electives			
	French 5 or 27	3	French 6 or 28	3
	German 25 or 27	3	German 26 or 28	3
	Sociology 27	3	Agricultural Economics 26	3
	History 25	3	History 28	3
			History 32	3
C	Military 25	2	Military 26	2
	Physical Education 23	1	Physical Education 24	1
D	Physical Education 27	2	Physical Education 28	2

JUNIOR AND SENIOR YEARS.

The work of the junior and senior years is, with certain restrictions, elective under the guidance of a special adviser, who is a member of the advisory committee of the major group which the student selects during his freshman year as his field for professional training. The aim of the last two years is to give to each student as high a degree of proficiency in some one branch of learning as is possible without sacrificing the breadth of knowledge and training which should characterize a well-rounded college course. In order to insure this result, each student is required to complete, during his last two years of study, certain requirements for specialization within his major group and certain minimum requirements in other groups:

- I. Agriculture: Departments of Agricultural Engineering; Agronomy; Animal Husbandry; Dairy Industry; Farm Management; Poultry Husbandry.
- II. Home Economics: Department of Home Economics.
- III. Horticulture: Departments of Floriculture; Forestry; Landscape Architecture; Horticultural Manufactures; Olericulture; Pomology.
- IV. Physical and Biological Sciences: Departments of Bacteriology and Physiology; Botany; Chemistry; Entomology, Zoölogy, and Geology; Mathematics and Civil Engineering; Physics; Veterinary Science.
- V. Social Sciences: Departments of Agricultural Economics; Education; Economics, History, and Sociology; Languages and Literatures.

For purpose of fulfilling the extra group requirements specified below, Groups I to III inclusive are regarded as a unit, since their work is comparable in field and character.

SPECIFIC REQUIREMENTS.

RULE 1. Credits for Graduation.—The minimum number of credits for graduation shall be 72 junior-senior credit hours, in addition to the satisfactory completion of the required courses of the freshman year and of the required and elective groups of the sophomore year.

RULE 2. Credits Each Semester.—Except upon special permission from the Scholarship Committee, no student shall enroll for more than 20 nor less than 16 credits each semester of his junior and senior years.

RULE 3. Specialization.—At the close of his sophomore year each student shall designate some department within his major group in which he desires to specialize, and shall complete, during his junior and senior years, not less than 18 and not more than 36 credits in junior-senior courses offered in that department. In special cases, with the approval of the student's major adviser and the Dean, this requirement may be satisfied by the selection of at least the minimum number of credits from two or more departments of closely related work.

RULE 4. Requirements in Other Groups.—Each student shall complete, during his junior and senior years, not less than 12 credits in other than his major group unit.

RULE 5. Credit in Military Science and Tactics.—Not to exceed 12 Junior-Senior credits in Military Science may be included in the minimum requirements for graduation.

RULE 6. Advisers.—The work of each student will be under the general supervision of his major group advisory committee from the beginning of his sophomore year, and during his junior and senior years under the immediate supervision of a special adviser who shall be some member of that committee and shall represent the department in which the student is to specialize under the terms of Rule 3. The adviser has full authority to prescribe the student's work required by Rules 3 and 4, and may advise the student with reference to his elections under Rule 7.

RULE 7. Free Electives.—Subject to the limitations imposed by Rules 2, 3, 4, and 5, each student may elect during his junior and senior years any course offered in the catalogue for which he has the necessary prerequisite training.

RULE 8. Registration.—No junior or senior shall register until his course of study is approved by his adviser.

A card for recording the election of courses for each semester will be issued from the Schedule Room. This election card, properly filled out and signed must be returned to the Schedule Room on or before June 1 of each year for first semester courses, and January 10 for second semester courses.

RULE 9. Changing of Major Group.—Application for change of major group can be made to the Dean in writing at any time; when approved by both major group advisory committees concerned and by the Dean and the Scholarship Committee, the change becomes operative at the beginning of the term following, provided that no change in the selection of a major group may be made by any student after registration day of his senior year.

Description of Courses.

[Heavy-faced Roman numerals indicate the semester in which the course is given. Numbering of courses: to 24, inclusive, freshmen; 25 to 49, inclusive, sophomores; 50 to 74, inclusive, juniors; 75 to 99, inclusive, seniors.]

SPECIAL COURSES FOR FRESHMEN.

1. **I. 2. II. ORIENTATION COURSE.**—The word orientation may be defined as "the determination of one's bearings or true position in relation to circumstances, ideas, etc." This course attempts to orient the student to the physical and social world in which he lives and works. During the first semester the subject matter deals primarily with the nature of our universe and the method of thinking used by man in coming to an understanding of it. An attempt is made to establish a time and space perspective and to form a well defined conception of the cosmos and one's relation to it. A total viewpoint is sought. It is shown that this comes only through a synthesis of the contributions of many subjects, astronomy, geology, chemistry, physics, biology, etc. During the second semester the main theme is man in society. The student is made conscious of his own original nature and of the several institutions which serve that nature. The development of these institutions is traced. The student is urged to identify his own activities with them. There is also an introduction to some of the social problems man now faces because of his attempt to understand and control his physical environment and himself. This semester is really an orientation to the social sciences.

The central thought throughout the year is human life. The aim is to see life as a whole. Since this is the objective no attempt is made to teach the subject matter of any one science. Rather the course seeks to organize around the individual life the material from many sciences without considering the conventional lines separating one from the other. It suggests how from such an organization a fuller understanding of life may arise and how this may lead to the living of life more knowingly and abundantly. It is hoped that by this orientation the student may see unity in the mass and maze of college subjects and that he may be led to plan his course more intelligently. Theoretically, such an orientation should assist the student in organizing his future information and aid him at the end of his senior year in making the final synthesis of his four years of subject matter in terms of his own life.

class hours. First semester.

Credit, 2.

class hours. Second semester.

Credit, 3.

Assistant Professor LANPHEAR.

5. **I. COLLEGE ADJUSTMENTS.**—For freshman women. A study of the experiences of everyday life in college, to help students recognize various social problems and think in terms of their solution.

class hour.

Credit, 1.

Miss SKINNER.

6. **II. VOCATIONAL OPPORTUNITIES FOR WOMEN.**—For freshman women. An outline of the occupational progress of women, with special attention to the opportunities for women in those vocations for which the Massachusetts State College gives foundation preparation.

class hours.

Credit, 2.

Miss HAMLIN.

DIVISION OF AGRICULTURE.

Professor RICE.

Agricultural Engineering.

Professor GUNNESS, Assistant Professor MARKUSON, Assistant Professor TAGUE,

Mr. PUSHEE, Mr. NEWLON.

The courses in agricultural engineering are planned to give a working knowledge of those phases of engineering which apply directly to the farm. It is expected that the student will acquire a clear understanding of modern farm practice as it relates to permanent improvements of the farm and the farmstead, and in the selection and use of farm equipment.

Elective Courses.

2. II. MECHANICAL DRAWING AND SHOP WORK. (Formerly 27. III.) — For freshmen. Drawing consists of geometric constructions, orthographic projection, isometrics, and the making of working drawings of simple farm equipment. In the shop, instruction is given in the use of carpentry and forging tools, the selection of materials, and the elements involved in framing structures and repair of farm equipment. Students who contemplate taking Agricultural Engineering 75 will find this course helpful.

3 2-hour laboratory periods, credit, 3
Assistant Professor MARKUSON, Mr. PUSHEE, and Mr. NEWLON.

51. I. RURAL SANITARY EQUIPMENT. — For juniors; seniors may elect. This course deals with the problems of water supply, sewage disposal, and ventilation which pertain to the farm and small community. Careful studies are made of water systems and sewage disposal plants and their adaptability to various conditions.

1 class hour.

1 2-hour laboratory period, credit, 2
Assistant Professor MARKUSON.

52. II. HOUSE PLANNING AND CONSTRUCTION. (Formerly 53. II.) — For juniors; seniors may elect. Plan designs of the small house will be made. The arrangement of interior equipment, especially in the kitchen, lighting, heating water supply, and sewage disposal will be studied, together with a brief history of the house, materials, construction methods, equipment, and architectural styles. Consideration will be given to the economics of house building, including financing and to maintenance and overhead expense.

1 class hour.

2 2-hour laboratory periods, credit, 3
Assistant Professor MARKUSON.

71. I. MOTORS. (Formerly 78. I.) — For seniors; juniors may elect. The course deals with the gasoline engine as used for stationary work, automobiles and tractors. The theory of the internal combustion engine is taken up in order to emphasize the effect of design and operation on power and economy. The various types of carburetors, ignition, and lubrication systems are studied in detail. Instruction is given by means of lectures and textbooks, and by operating and repairing stationary engines, automobiles, and tractors. Special attention is given to overhauling and repairing. This course also deals with the application of electricity to farm operations including wiring and electric motors; pumping equipment; and refrigeration equipment as used on New England farms.

3 2-hour laboratory periods, credit, 3
Assistant Professor TAGUE and Mr. PUSHEE.

72. II. DRAINAGE AND IRRIGATION ENGINEERING. (Formerly 79. III.) — For seniors; juniors may elect. The course covers the engineering phase of drainage and irrigation. The various systems are studied, and practice is given in the design of drainage and irrigation systems. Field work gives practice in surveying for drains, platting, locating drains, erecting batterboards, and laying tile. Practice is given in assembling equipment for spray irrigation, and the flow of water through nozzles is studied by means of laboratory tests.

1 class hour.

1 2-hour laboratory period, credit, 2
Assistant Professor MARKUSON.

75. I. FARM STRUCTURES. — For seniors; juniors may elect. A study of the strength and durability of concrete, wood, stone, and clay products, and of the mechanical principles underlying their use in farm construction. The design of various farm buildings, such as the general purpose barn, dairy stable, hog house, sheep barn, milk house, etc. In the drafting room, details of construction will be worked out, a study of the mechanics of simple roof trusses will be made, and a complete design of some major farm building will be finished in all essential details. Blueprints of the finished design will be made.

1 class hour.

2 2-hour laboratory periods, credit, 3
Assistant Professor MARKUSON.

80. **II. DAIRY MECHANICS** (1933-34). (Formerly 81. III.) — For juniors; seniors may elect. A study of dairy machinery, including steam boilers, engines, pumps, traps, refrigeration machinery, and heat-controlling devices. Practice is given in pipe fitting, packing valves, lacing belts, and similar repair jobs on the equipment used in dairy plants. Given in alternate years.
1 class hour.

1 2-hour laboratory period, credit, 2.
Assistant Professor TAGUE and Mr. NEWLON.

83. **I and II. AGRICULTURAL ENGINEERING PROBLEMS.** — Open to seniors only. This course consists of individual problems chosen by the students under guidance of the department. The work is of an advanced nature, supplementing that of the regular agricultural engineering curriculum. Copy of project outline, indicating the number of credits, must be filed with the department and with the Dean at the opening of the semester.

Credit, 3.
The DEPARTMENT.

85. **I. RURAL ELECTRIFICATION.** (Formerly 82. I.) — For seniors; juniors may elect. This course is planned primarily for students who are interested in the application of electricity to agriculture. It includes a study of the generation and distribution of electricity for light and power. Special emphasis is placed on the utilization of electricity on the farm and in rural communities.
1 class hours.

1 2-hour laboratory period, credit, 3.
The DEPARTMENT.

Agronomy.

Professor BEAUMONT, Assistant Professor CUBBON, Assistant Professor DICKINSON, Mr. THAYER.

The courses in agronomy are designed to give instruction concerning the basic knowledge of the soil and its management, fertilizers and their use, and the principal products of the field. An important objective of our undergraduate teaching is to give supporting training to groups specializing in other departments. For undergraduates desiring to specialize in agronomy adequate courses are offered, but for those expecting to go into advanced educational or research work our graduate training is recommended as preferable.

Elective Courses.

1. **I. AGRONOMY.** — For freshmen. An introductory course in agronomy designed to acquaint the student with the broader aspects of field crops and their production. The relation of crops to civilization; classification and uses of field crops; factors affecting plant growth; soil characteristics and crop adaptation; the use of fertilizers; and cultural practices will be studied. Field trips will be taken to the College Farm and nearby farms.
1 class hours.

1 2-hour laboratory period, credit, 3.
The DEPARTMENT.

2. **II. SOILS.** (Formerly 3. III.) — For freshmen. This course is designed to give the student an intimate knowledge of the nature, properties, and management of soils. Classification and some of the broader aspects of utilization of soils will be stressed.
1 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor CUBBON.

51. **I. FIELD CROPS.** (Formerly 50. I.) — For juniors and seniors. A study of methods and problems of production of field crops important in New England. The successful production of good forage is essential to profitable dairy farming. Special emphasis will be given hay, pasture, and other crops important in dairy farming.
1 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor CUBBON.

Prerequisite, Agronomy 1.

52. **II. SOIL UTILIZATION.** (Formerly 53. **III.**) — For juniors and seniors. A course intended primarily for those not having had other courses in soils. It deals with the nature and properties of soil types, their adaptation to crops, and special problems arising in the management of extreme soil types.
3 class hours.

Credit, 3
Assistant Professor CUBBON.

53. **I. SOIL FERTILITY.** (Formerly 52. **II.**) — For juniors and seniors. This course deals with factors affecting soil fertility, with special attention to organic matter, soil reaction, and the use of fertilizers. Attempt will be made to meet the special needs of groups of students from other majors.
2 class hours.

1 2-hour laboratory period, credit, 3
Assistant Professor CUBBON.

54. **II. TURF AND FORAGE GRASSES.** — For juniors and seniors. Designed to give a practical working knowledge of fine turf and forage grasses. The identification of seeds and plants, their ecology and relative value will be emphasized.
2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor DICKINSON.

77. **I. CROP IMPROVEMENT.** (Formerly 78. **I.**) — For seniors. Theory and practice of the improvement of field crops by breeding and selection.
2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor CUBBON.

Prerequisite, Agronomy 1 and 51.

78. **II. FERTILIZERS.** (Formerly 77. **II.**) — For seniors; juniors may elect. A study of the source, properties, and behavior of commercial fertilizers and soil amendments. Attention will be given to such questions as home-mixed versus commercial fertilizers, the use of concentrated materials, and the economical purchase of fertilizers.
2 class hours.

1 2-hour laboratory period, credit, 3.
Professor BEAUMONT.

79. **I. JUDGING OF FIELD CROPS.** — For juniors and seniors. A study of varieties, strains and grades of forage, root, tuber, and grain crops in relation to their market value. Utility rather than expected performance of progeny will be stressed. Official U. S. Government standards will be used.

1 2-hour laboratory period, credit, 1.
Assistant Professor CUBBON.

Prerequisite, Agronomy 51.

82. **II. SPECIAL PROBLEMS IN AGRONOMY.** — For seniors taking major work in agronomy.

3 2-hour laboratory periods, credit, 3.
Professor BEAUMONT.

Animal Husbandry.

Professor RICE, Assistant Professor GLATFELTER, Assistant Professor PARSONS, Mr. FOLEY.

The courses in animal husbandry are designed to give the student a thorough grounding in the scientific, practical, and commercial phases of horse, sheep, swine, beef, and dairy cattle production. The choice of supporting courses is governed by the student's ultimate objective. Upon completion of the four years' course, three general fields are open to the graduate. First, the practical field comprising the actual production of livestock and its products or the management of livestock farms; second, the professional field which embraces college, secondary school, or extension teaching, or federal, state, or commercial research; and third, the commercial field comprising all phases of the meat-packing, milk-production, wool or feed industries, including connections with the large companies, farmers' cooperative associations, or the operation of local plants.

Elective Courses.

26. II. TYPES, BREEDS and JUDGING of LIVESTOCK. (Formerly 2. II.) — For sophomores. This first course in animal husbandry is designed to acquaint the student with the history, developmental trends, and present status of all the breeds of horses, cattle, sheep, and swine in the United States. It also serves as a survey course showing the magnitude of the livestock industry, and the indispensability of livestock and their manifold products in a modern, civilized country. During May and June trips will be taken on Saturdays to the leading herds of dairy cattle in New England where practice in show ring judging will be given and the three highest ranking students in this judging will represent the college in the intercollegiate Dairy Cattle Judging Contests at the Eastern States Exposition and the National Dairy Show the following fall.

2 class hours.

1 2-hour laboratory period, credit, 3.

Including Saturday trips, credit, 4.

Mr. FOLEY.

51. I. THE NUTRITION OF FARM ANIMALS. (Formerly 50. I.) — For juniors; seniors may elect. This course is planned to acquaint the student with the chemistry and physiology of digestion, resorption and assimilation, in work, meat, wool or milk production. The feed requirements of the various classes of livestock in terms of energy, proteins, minerals and vitamins are ascertained, as well as the rôle of the various feeds in meeting these requirements.

3 class hours.

Credit, 3.

Assistant Professor GLATFELTER.

52. II. THE BREEDING AND IMPROVEMENT OF FARM ANIMALS. (Formerly 53. III.) — For juniors; seniors may elect. This course is planned to acquaint the student with the facts of reproductive physiology, with the facts and theories of modern genetics, and to show how such knowledge may be utilized for the creation of more beautiful and more efficient animal types.

3 class hours.

Credit, 3.

Professor RICE.

53. I. MEAT AND MEAT PRODUCTS. (Formerly 52. II.) — For juniors. This course embraces a study of the market classes and grades of beef cattle, sheep, and swine. It also deals with the manufacture of animals into their various commercial products and the distribution of these products to the consumer. Practice is given in the slaughtering of beef cattle, hogs, and sheep; judging of carcasses; cutting and curing of meats. The practical work is augmented by studies in the grading of fat stock, in packing-house methods, in the magnitude and trends of the meat industry, and in the opportunities of local New England marketing.

2 3-hour laboratory periods, credit, 3.

Mr. FOLEY.

Prerequisites, Animal Husbandry 26 and 51.

56. II. BEEF AND SHEEP PRODUCTION AND FAT STOCK JUDGING. (Formerly 76. II.) — For juniors. The purpose of this course is to seek the solution of the various economic, nutritional, genetic, and managerial problems concerned in the production of beef cattle and sheep. During May and June trips will be taken on Saturdays to the leading herds and flocks in New England where practice in show ring judging will be given. The five highest ranking students in this judging will represent the college in the intercollegiate Fat Stock Judging Contests at the Eastern States Exposition and the International Livestock Exposition the succeeding fall.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor GLATFELTER.

Prerequisites, Animal Husbandry 26 and 51.

75. I. HORSE AND SWINE PRODUCTION. — For seniors. The purpose of this course is to seek the solution of the various economic, nutritional, genetic and managerial problems concerned in the production of horses and swine. The

student is called upon to utilize the scientific principles of feeding, breeding, etc., which he has mastered in his first three years of college work in solving the manifold problems concerned in successful livestock production.

2 class hours.

1 2-hour laboratory period, credit, 3.

Mr. FOLEY.

78. II. DAIRY CATTLE AND MILK PRODUCTION. (Formerly 77. III.) — For seniors. The same as Course 75 above but applied to Dairy Cattle and Milk Production.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professors RICE and PARSONS.

80. II. ADVANCED BREED STUDIES. — This course is open only to those specializing in animal husbandry. Some one or more breeds of livestock will be thoroughly studied especially from the standpoint of its genetic make-up and of the selection of a foundation herd or flock.

1 2-hour laboratory period, credit, 1.

Professor RICE.

81. I. 82. II. ANIMAL HUSBANDRY SEMINAR. — Required of students majoring in animal husbandry. Students will prepare original papers and talks on various pertinent topics. Round table discussions of animal husbandry investigational work and practices will be conducted.

1 class hour.

Credit, 1.

The DEPARTMENT.

Dairy Industry.

Professor FRANDSEN, Assistant Professor MACK, Mr. LINDQUIST.

The courses in dairy industry are offered to meet the needs of students interested in the scientific study of handling market milk, and the making of ice cream, butter, cheese, and other dairy products; agricultural college teaching, and experiment station work; high and secondary school teaching; extension work; research and investigational work.

Elective Courses.

25. I. GENERAL DAIRYING. (Formerly 3. III.) — For sophomores. A general course, introductory to all other courses in dairy industry, and for those who wish to take only one course in dairying to get a general knowledge of the subject. The work covers briefly: a study of milk, its secretion, composition, and various tests applied thereto; methods of pasteurizing and handling milk and cream; the use of separators; elements of ice-cream, butter, and cheese making.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor FRANDSEN and Mr. LINDQUIST.

50. II. JUDGING DAIRY PRODUCTS. (Formerly 51. II.) — For juniors; seniors may elect. A study of market standards and grades of dairy products, with practice in judging milk, ice cream, butter, and cheese. The student learns to recognize quality in dairy products, to detect specific defects, and to know their causes and the means of their prevention. A team is chosen from this class to represent the college in dairy products judging contests at the Eastern States Exposition and the National Dairy Industries Exposition.

1 2-hour laboratory period, credit, 1.

Assistant Professor MACK and Mr. LINDQUIST.

52. II. MARKET MILK. — For juniors; seniors may elect. A study of the various phases of the market milk industry: sanitary production, transportation, pasteurization and handling in the city plant, marketing, delivery systems, milk and its relation to public health, inspection, milk laws, food value, and advertising. Cultured milk and other milk drinks also are included. Some milk plants are visited, the cost of the trip not exceeding five dollars.

2 class hours.

2 2-hour laboratory periods, credit, 4.

Mr. LINDQUIST.

75. I. DAIRY CHEMISTRY (1934-35). (Formerly 76. I.) — For juniors and seniors. The various physical and chemical properties of milk, milk products, and their components are studied. Testing and control methods commonly used commercially for milk and dairy products are included; moisture and fat determinations, casein, salt, and acid tests, work with the Mojonnier apparatus, and other applied chemical tests are taken up in the laboratory. Given in alternate years.
1 class hour. 2 2-hour laboratory periods, credit, 3.

Assistant Professor MACK.

77. I. BUTTER AND CHEESE MAKING (1933-34). — For juniors and seniors. The first half of the semester is devoted to butter making, the remainder to cheese making, condensed and powdered milks. The various phases of the butter industry studied are: separators and cream separation; pasteurization, neutralization, and ripening of cream; preparation of starter cultures; churning, marketing, and scoring of butter; creamery management. The work in cheese making includes Cheddar, cream, Neufchâtel, cottage, processed cheeses, etc. The manufacture of condensed and powdered milk, and commercial casein is also covered. Given in alternate years.

2 class hours.

2 3-hour laboratory periods, credit, 5.

Assistant Professor MACK and Mr. LINDQUIST.

Prerequisite, Dairy 25.

78. II. ICE-CREAM MAKING. — For juniors and seniors. The course includes a study of the principles and practices of ice-cream making. The effects of such factors as composition, quality, pasteurization, homogenization, aging, and freezing on the finished product are considered. Sherbets, ices, fancy and individual forms, and all flavors of ice cream are studied. Some time is devoted to refrigeration machinery, delivery equipment, and merchandising methods as they are related to the industry.

2 class hours.

2 2-hour laboratory periods, credit, 4.

Assistant Professor MACK.

79. I. 80. II. SEMINAR. — For students majoring in dairy industry. The course consists of a study of research done by the experiment stations, also a review of foreign literature. Students prepare papers on timely dairy subjects. Frequent addresses are made to the class by visiting authorities in dairying.

1 class hour.

Credit, 1.

Professor FRANDSEN.

Farm Management.

Professor FOORD, Assistant Professor BARRETT.

The purpose of the courses in farm management is to acquaint the student with the economic ideas and principles which apply to the organization and operation of the farm business. Farm Management brings together the research and knowledge from the other sciences, and studies them for the purpose of determining how to organize the farmer's resources so as to obtain the maximum economic return.

Elective Courses.

75. I. FARM ORGANIZATION. — For seniors. This course analyzes the functions of the farmer as a business proprietor. Some of the problems and principles considered are: comparative advantage, choice and combination of enterprises and factors of production, least cost and highest profit, opportunity costs, farm and building layout, the economical use of funds, and adjustments to production and price cycles.

3 class hours.

Credit, 3.

Assistant Professor BARRETT.

Prerequisite, the required freshman and sophomore work in agriculture or horticulture, or the permission of the instructor.

76. II. FARM OPERATION AND ADVANCED FARM ORGANIZATION. — For seniors. The first part of this course further develops the principle of opportunity costs, and includes the use of farm records and accounts as a basis for planning and budgeting,

"scientific management" as applied to efficient farm technique, and the execution of the plans and policies of the organization. The last part of the semester will be given over to a more specific study of the principles and practices outlined in Course 75, with special reference to their application to selected farms. Field trips are required. The approximate expense for travel is five dollars.
1 class hour.

1 4-hour laboratory period, credit, 3.
Assistant Professor BARRETT.

Prerequisite, Farm Management 75.

78. II. SEMINAR. — For seniors majoring in agriculture; others by arrangement. Farm management problems will be considered from the viewpoint of research, extension, and teaching.
1 class hour.

Credit, 1.
The DEPARTMENT.

80. II. SPECIAL PROBLEMS. — For seniors majoring in farm management; others by permission of instructor. This course will usually consist of a study of efficiency on a specific farm but will be adapted to the needs of the individual student. An original semester paper will be required.
2 or 3 hours or equivalent.

Credit, 2 or 3.
Professor FOORD.

Poultry Husbandry.

Professor GRAHAM, Professor SANCTUARY, Assistant Professor BANTA, Mr. VONDELL.

The department aims to give instruction in the science, art, and practices of poultry keeping not only to the men majoring in this department, but also to students majoring in other departments and desiring supporting courses in poultry husbandry. Our major courses prepare men for the successful operation of commercial poultry farms and marketing projects either as owners or managers; for graduate work, teaching, extension and investigational work.

Elective Courses.

25. I. POULTRY JUDGING. — For sophomores. A study of the origin and evolution of our standard breeds and varieties of domestic fowl; judging production quality, using trapnested birds; judging exhibition quality by score card and comparison. One or more poultry farms, an egg-laying contest, and a poultry show will be visited. Poultry judging teams competing in the inter-collegiate contest at Madison Square Garden each January are trained in this course.
1 class hour.

2 2-hour laboratory periods, credit, 3.
Assistant Professor BANTA.

51. I. POULTRY FEEDS AND FEEDING. — For juniors; seniors may elect. A study of the common feeds and the scientific principles underlying the field of nutrition. Recent experimental work and current feeding problems will receive special consideration. For observational practice and accumulation of original data, the management of a pen of birds will be required for a period of a few weeks.
3 class hours.

1 2-hour laboratory period, credit, 4.
Assistant Professor BANTA.

52. II. INCUBATION AND BROODING. — For juniors; seniors may elect. A study of the fundamental principles underlying incubation and brooding practices. The science of physics and general biology is applied to the study of incubation and brooding processes. Students become thoroughly acquainted with modern incubation and brooding equipment through detailed study and operation of typical incubators and brooders. Present-day problems are considered and some are investigated as a part of the class work.
1 class hour.

2 2-hour laboratory periods, credit, 3.
Professor SANCTUARY.

54. **II. POULTRY HOUSING AND SANITATION.** (Formerly 50. I.) — For juniors; seniors may elect. A consideration of the biological needs of poultry from the standpoint of housing, and the economic principles governing designing and construction of poultry houses and equipment for poultry farm buildings. The course also embodies a study of the principles of poultry sanitation, including external parasites and the insecticidal agents for their control.
1 class hour.

1 2-hour laboratory period, credit, 2.
Professor SANCTUARY.

75. **I. MARKET POULTRY AND POULTRY PRODUCTS.** (Formerly 76. I.) — For seniors. A study of market classes of poultry and eggs; preparation of poultry products for market; requirements of different markets; methods of marketing, involving a study of distribution, finances, and business organizations; cold storage and transportation; advertising, prices, and food values. Laboratory exercises in candling, packing, killing, dressing, and similar operations to make the above named factors more concrete. Students are required to fatten pens of chickens by different methods and rations, keeping accurate data of the gains in weight and quality, also the costs of feed and labor, and resultant profit or loss. Competitive judging of the exhibits in the Annual Market Poultry Show, staged by the members of this class, is a feature of the course. When possible, a short trip to Springfield is arranged to study cold storage plants and the handling of poultry products in the local market.
1 class hour.

1 2-hour laboratory period, credit, 2.
Mr. VONDELL.

77. **I. POULTRY BREEDING.** — For seniors. Methods of selection and improvement of poultry are developed through the study of the principles of heredity. Most of the course centers around the progeny test and pedigree method of breeding. Students taking this course participate in the college plant selection in pedigree work. Three breeds of poultry, each pedigreed for from seven to twenty years, furnish practice materials.
3 class hours.

1 2-hour laboratory period, credit, 4.
Professor SANCTUARY.

78. **II. POULTRY FARM ORGANIZATION.** — For seniors. This course embodies the application of economic and business principles to poultry farming. The place and importance of the various branches of well-organized poultry farms and their relation to each other receive special consideration; also the study of surveys and production costs. A trip covering two or three days will be made to representative successful poultry farms. The expense per student is approximately fifteen dollars. This trip is required of each student taking the course for credit.
1 class hour.

1 2-hour laboratory period, credit, 2.
Assistant Professor BANTA.

Prerequisite, Poultry 77.

80. **II. FARM POULTRY.** (Formerly 79. III.) — For seniors; juniors may elect. For those students who desire a general knowledge of poultry husbandry but who cannot devote more than one term to the subject; it is not intended for students specializing in poultry, and such students are admitted only by special permission. Emphasis is placed on the farm flock and its economic management. Utility classification, housing, culling, feeding, hatching, rearing, production, marketing, and disease control receive special consideration.
2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor BANTA.

81. **I. 82. II. POULTRY PROBLEMS.** (Formerly 80. I, II, and III.) — Open to seniors only. This course consists of individual problems chosen by the students under guidance of the department. The work is of an advanced nature, supplementing that of the regular poultry curriculum. Copy of project outline, indicating the number of credits, must be filed with the department and with the Dean at the opening of the semester.

Credit, 1 to 4.
The DEPARTMENT.

DIVISION OF HOME ECONOMICS.

Professor SKINNER.

Home Economics.

Professor SKINNER, Assistant Professor KNOWLTON, Assistant Professor BRIGGS.

The home economics courses offered are planned to meet the needs of (1) those students who are interested in education for homemaking as an integral part of the general education of women; (2) those who are interested in professional or vocational work in which an understanding of home economics is fundamental; (3) those who are interested in preparing for home economics extension service, both junior and adult; (4) those who wish to enter a graduate school leading to professional work. Other departments offer courses planned especially for students in home economics, as follows: House Planning and Construction in the Department of Agricultural Engineering; General Design in the Department of Landscape Gardening; and Food Preservation in the Department of Horticultural Manufactures.

Elective Courses.

1. **I. INTRODUCTION TO HOME ECONOMICS.** — For freshmen. A brief study of the share which women have had in social progress, in order that each student may recognize the importance of her relationships to her own family group, and may become conscious of problems in the modern home which need to be considered.

3 class hours.

Credit, 3.

Miss SKINNER.

2. **II. CLOTHING SELECTION.** — For freshmen. A study of the principles of clothing selection in order to assist each student to choose satisfactorily line, color, and texture. Clothing costs in relation to a student's own wardrobe, hygiene and care of clothing, and the essentials of good grooming are considered.

2 class hours.

1 2-hour laboratory period, credit, 3.

Miss BRIGGS.

25. **I. TEXTILES.** (Formerly 46. III.) — For sophomores. A study of fibers, yarns, and fabrics with the aim of developing good judgment in the buying and using of clothing and house furnishing materials.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Miss BRIGGS.

30. **II. FOODS.** (Formerly 3. III.) — For sophomores. A study including fundamental principles and comparative methods of food preparation with emphasis on the nutritional and economic aspects of foods. A basic course for further study of foods.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Miss KNOWLTON.

32. **II. APPLIED DESIGN.** — For sophomores. Applications of the principles of design are worked out in specific problems, using various media. Much opportunity is allowed for individual expression. The estimated cost of materials used is five dollars. Students provide all materials subject to the approval of the instructor.

3 2-hour laboratory periods, credit, 3

Miss BRIGGS.

Prerequisite, Drawing 30 or permission of instructor.

51. **I. FOODS.** (Formerly 40. III.) — For juniors. A continuation of Course 30 with a study of foods from the standpoint of the day's meals. Especial emphasis on economy in expenditure of money, time and labor.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Miss KNOWLTON.

52. **II. NUTRITION AND DIETETICS.** (Formerly 51. II.) — For juniors. A study of food needs of the body under varying conditions of size, activity, age and health, and the value of different foods in contributing to these needs. Special emphasis is placed on the relationship of the nutritive value of food to its cost. This course is designed to help students to understand how food selection is related to achieving and maintaining health.

2 class hours.

2 2-hour laboratory periods, credit, 4.
Miss KNOWLTON.

60. **II. HOUSEHOLD EQUIPMENT** (1934-35). — For juniors and seniors. A study of the selection, operation, care, and efficient arrangement of equipment, with an analysis of the time and energy required in various processes. Given in alternate years.

2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor TAGUE.

61. **I. CLOTHING SELECTION AND CONSTRUCTION.** (Formerly 28. I.) — For juniors. A study of art principles as they apply to clothing design. Principles of construction are given through the use of commercial patterns and flat pattern work in the making of garments. Students provide all materials subject to the approval of the instructor.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Miss BRIGGS.

62. **II. HOME FURNISHING.** (Formerly 61. III.) — For juniors. A study of the fundamental principles which underlie the successful planning and furnishing of a satisfying home. Many applications of these principles are worked out in practical problems. Class trips will be taken at an estimated expense of two dollars.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Miss BRIGGS.

75. **I. HOME MANAGEMENT.** (Formerly 76. I.) — For seniors. A study of personal and family standards of living in the modern home, the economic relations of the household, and the use of time, energy, and money as a means to influence the home situation.

3 class hours.

Credit, 3.
Miss SKINNER.

77. **I or II. HOME MANAGEMENT PRACTICE.** — For seniors. Students live in the Home Management House for an interval varying in length from one-half semester to one semester. This course provides an opportunity for a student to assume responsibilities involved in managing a home and to apply the technical and laboratory training of the previous three years. Their activities include budgeting, accounting, buying, planning, preparing and serving meals, care of the house, and social management.

Credit, 4.
Miss KNOWLTON.

Prerequisites, Home Economics 30, 75, and the approval of the department.

80. **II. PROBLEMS OF THE FAMILY.** — For seniors. This is a study of the problems of family life in relation to the modern social organization. This course aims to develop an intelligent social consciousness and a sense of individual responsibility in family relationships.

3 class hours.

Credit, 3.
Miss SKINNER.

81. **I. METHODS OF TEACHING HOME ECONOMICS.** — For seniors, by arrangement with the head of the division. A study of educational objectives especially as applied to the teaching of home economics in junior and senior high schools, with detailed study of organization problems and the selection and arrangement of equipment. This course also includes an evaluation of instructional material,

and the selection and organization of subject matter for secondary schools. A few required trips, estimated cost three dollars.

2 class hours.

1 2-hour laboratory period, credit, 3.

The DEPARTMENT.

83. I. 84. II. PROBLEMS IN HOME ECONOMICS. (Formerly 82. II. and 83. III.) — For seniors who are home economics majors. A more intensive application of home economics to special problems. This course also serves as a beginning of simple research work. For students particularly interested in the teaching of home economics, there may be an opportunity for observation and practice teaching under supervision. Required trips at an estimated cost of five dollars.

2 class hours.

1 2-hour laboratory period, credit, 3.

The DEPARTMENT.

86. II. CHILD CARE AND TRAINING (1933-34). (Formerly 79. II.) — For seniors. A study of the growth and development of the child, the care of children at various ages, treatment in behavior problems, and the influence of environment in shaping personality. Field trips at an estimated cost of two dollars. Given in alternate years.

3 class hours.

Credit, 3.

87. I. ADVANCED CLOTHING PROBLEMS. (Formerly 85. II.) — For seniors. Continuation of clothing selection with especial emphasis on economic problems involved. Costume designing and modeling are included which give opportunity for experimentation in designing. A study is made of available source material. Students provide all materials subject to the approval of the instructor.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Miss BRIGGS.

DIVISION OF HORTICULTURE.

Professor VAN METER.

Floriculture.

Professor THAYER, Assistant Professor HUBBARD, Mr. ROSS.

The courses in floriculture are intended to present a general knowledge of all phases of greenhouse design, construction, heating, and management, the culture of florists' crops (under glass and outdoors), floral decoration and arrangement, and the marketing of plants and flowers. The department aims to train students so that they may take up various phases of commercial floriculture, positions in nursery establishments, and the management of conservatories on private estates, in parks and cemeteries.

Elective Courses.

26. II. GARDEN MATERIALS. (Formerly 25. II.) — For sophomores. A study of the annuals, biennials, herbaceous perennials, bulbs, bedding plants, and roses that are valuable for use in floricultural or landscape gardening work. Methods of propagation, culture, and uses of the various plants are considered; identification of materials; lectures, assigned readings, and reports.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor THAYER and Mr. ROSS.

51. I. GREENHOUSE MANAGEMENT. (Formerly 50. I. and 51. II.) — For juniors; seniors may elect. This course is intended to familiarize students with the methods and principles involved in the management of greenhouses and greenhouse crops; history and development of the floricultural industry; preparation of soils; fertilizers; potting; watering; ventilation; control of insects and diseases; methods of plant propagation; forcing of plants. At some time during the semester the members of the class will be required to take a one-day trip to visit large commercial establishments at an approximate expense of five dollars. Lectures, assigned readings, reports, and laboratory practice.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor THAYER.

52. II. FLORAL ARRANGEMENT. — For juniors; seniors may elect. A study of the principles involving the arrangement and use of cut flowers and plants; funeral designs, basket and vase arrangements, table decorations, home, church, and other interior decorations. A study of color and color harmony as applied to such work. Lectures, assigned readings, reports and laboratory practice. This course is limited to ten students, preference being given to major students in Floriculture and Landscape Architecture.

1 class hour.

2 2-hour laboratory periods, credit, 13.

Professor THAYER.

54. II. GREENHOUSE CONSTRUCTION AND HEATING. (Formerly 53. I.) — For juniors; seniors may elect. The location, types, arrangement, construction, cost, equipment, heating, and ventilating of greenhouse structures; the drawing of plans and study of specifications for commercial houses and conservatory ranges. Such practical work as glazing and the construction of concrete benches and cold frames is included as facilities allow. Lectures, assigned readings, and problems.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor THAYER.

58. II. AMATEUR FLORICULTURE. — This course is intended primarily for major students in the Division of Home Economics, and other women students. Three phases of floriculture will be considered briefly: the arrangement and use of cut flowers for various purposes in the home, house plants and their culture, and the small home garden.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor THAYER.

75. I. 76. II. COMMERCIAL FLORICULTURE. — For seniors. A detailed study of the cultural methods for the important commercial cut-flower crops and potted plants. The marketing of flowers and plants, including the management of wholesale markets and retail stores, a study of systems of record keeping, cost analysis, inventory methods, and other phases of this important part of the floricultural industry. Trips may be taken to nearby commercial establishments. The lectures are supplemented with textbooks, assigned readings and problems.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor HUBBARD.

Prerequisite, Floriculture 51.

79. I. CONSERVATORY PLANTS. (1934-35.) — Alternates with Course 81. For juniors and seniors. A study of the foliage and flowering plants used in conservatory work; methods of propagation; assigned readings, reports, and identification of materials.

1 class hour.

1 2-hour laboratory period, credit, 2.

Professor THAYER.

81. I. HERBACEOUS GARDENS AND BORDERS (1933-34). — Alternates with Course 79. For juniors and seniors. This course is a continuation of Course 26 with emphasis on the uses of herbaceous materials in various types of plantings. Lectures, assigned readings, planning of borders and gardens.

1 class hour.

1 4-hour laboratory period, credit, 3.

Professors THAYER and HUBBARD.

82. II. SEMINAR. (Formerly 81. III.) — For seniors majoring in floriculture. Presentation and discussion of research work in floriculture and other related fields, reports on assignments by individual members of the class, and the preparation of a thesis dealing with an assigned subject. Seminars are conducted weekly.

1 class hour.

4 laboratory hours, credit, 3.

Professor THAYER.

Forestry.

Professor HOLDSWORTH.

The courses in forestry are designed for students who desire a knowledge of the management, regulation and improvement of woodlands of moderate area. They are further intended to develop the place of forest cultivation in land utilization and to be explanatory of the general field of forestry for those who plan to become students in graduate schools of forestry.

Elective Courses.

55. I. THE MANAGEMENT, PROTECTION AND USE OF WOODLANDS. — For juniors and seniors. Methods of determining the volume and value of the forest growing stock; the determination of growth and yield; the principles of forest regulation and sustained yield; forest protection; forest development and maintenance. The course is presented with especial emphasis on the application of the principles of forestry to New England conditions. Problems in applied forestry are carried out on the Mount Toby Demonstration Forest. Text and assigned readings.

1 class hour.

1 4-hour laboratory and field period, credit, 3.
Professor HOLDSWORTH.

56. II. THE PRINCIPLES OF SILVICULTURE AND WOOD PRODUCTION. — For juniors and seniors. The nature of a forest; factors influencing and controlling the growth and development of forest trees and stands; forest effects on site conditions; methods of forest reproduction through silvicultural practice; intermediate cuttings; choice of species for forest use; supplementary seeding and planting; forest sanitation and its relation to silviculture; the products of the forest. The field work in applied forestry is conducted principally on the Mount Toby Demonstration Forest. Visits of inspection are made to certain accessible forests which have been under scientific management for many years.

1 class hour.

1 4-hour laboratory and field period, credit, 3.
Professor HOLDSWORTH.

58. II. FOREST ECONOMICS AND POLICY. — For juniors and seniors. The growth and development of forestry from an historic viewpoint; the forest as a natural resource and its place in our economic life; our past and present forest resources; Federal and State forest organization; private forestry; the development of a National Forest Policy. Text, assigned readings. A semester paper, the subject to be selected by the student after conference with the instructor, will be required.

3 class hours.

Credit, 3.
Professor HOLDSWORTH.

Horticultural Manufactures.

Professor CHENOWETH, Mr. RICE.

The courses in Horticultural Manufactures have been planned to give the student (1) training in food preservation sufficient to meet the needs of a general education, and (2) training for technical work in the food industries including business, research, and teaching.

Students who desire the elementary training only as given in (1) above will restrict their work to the first year courses and they will not be required to offer prerequisites other than the required general courses in the sciences. Students who desire to make Horticultural Manufactures their major or specialized subject will be expected to take the full two years' work as outlined, and should consult with the department as to required courses in chemistry and bacteriology.

Elective Courses.

51. I. FRUIT AND VEGETABLE PRODUCTS. — For juniors; seniors may elect. This course together with Course 52 gives the student a general elementary knowledge of the science and practice of food preservation. Principles and theories of the various methods of food preservation are the basis for classroom exercises.

The laboratory work during the first semester deals with the preservation of the autumn fruits and vegetables, small fruit products, freezing, and dehydration.

class hour. 2 2-hour laboratory periods, credit, 3.
Professor CHENOWETH.

52. II. MISCELLANEOUS PRODUCTS. — For juniors; seniors may elect. This is a continuation of Course 51. The laboratory work includes pickles and pickle products, maple products, citrus fruits products, fruit syrups, and the canning of meats, poultry, and the spring vegetables.

class hour. 2 2-hour laboratory periods, credit, 3.
Professor CHENOWETH.

Prerequisite, Horticultural Manufactures 51.

61. I. COMMERCIAL PRACTICES. — For seniors who specialize in horticultural manufactures. A survey of commercial practices in canning and manufacturing of food products. This will involve a study of equipment, factory arrangement, sanitation, and government regulations, the operation of types of commercial equipment in quantity production.

class hour. 2 2-hour laboratory periods, credit, 3.
Professor CHENOWETH.

Prerequisites, Horticultural Manufactures 51 and 52.

62. II. FOOD PRESERVATION PROBLEMS. — For seniors who specialize in horticultural manufactures. This is a continuation of Course 61. The class exercises will deal largely with a survey study of the sources of raw materials, commercial methods of manufacture, packing and distribution of the more common foods, also study of the more important contributions of research. Laboratory work will include the formation of research projects, interpretation of research data. The legal use of adulterants, the simple analysis of foods and the commercial practices as applied to preservation of such materials as are available: fish, meats, poultry, and spring vegetables.

class hour. 2 2-hour laboratory periods, credit, 3.
Professor CHENOWETH.

Prerequisite, Horticultural Manufactures 61.

71. I. 72. II. SEMINAR. — For seniors who specialize in horticultural manufactures. Two seminar sessions are held each week.

class hours. Credit, 2.
The DEPARTMENT.

78. II. FOOD PRESERVATION. — For seniors and graduate students. Not open to students who have credit for Horticultural Manufactures 51, 52, or 81. This is a general course in food preservation and intended only for those who desire a broad general knowledge of the subject because of its cultural or practical value.

class hour. 2 2-hour laboratory periods, credit, 3.
Mr. RICE.

81. I. HOME FOOD PRESERVATION. — For junior women; seniors and graduate students may elect. This course covers the general field of food preservation as applied to the home. A text book is used as a basis for classroom exercises. Laboratory work deals with the canning of fruits, vegetables, meats and poultry; the manufacture of food products including jams, jellies, conserves, marmalades, pickles, fruit butters, etc. The emphasis in both class and laboratory is placed on scientific, economical practices for home food preservation.

class hour. 2 2-hour laboratory periods, credit, 3.
Mr. RICE.

82. II. SPECIAL PRODUCTS. — For seniors and graduate students. The materials offered in this course are as follows: the home manufacture of fruit reserves, candied and glacé fruits, fruit pastes, confections, candies, and other

specialties. Approximately one-half the semester is devoted to elementary work in candy making.

2 2-hour laboratory periods, credit, 2.
Professor CHENOWETH and Mr. RICE.

Horticulture.

Professor BLUNDELL, Assistant Professor FRENCH, Mr. LOWRY.

The general subject of horticulture divides naturally into subjects of pomology, floriculture, forestry, landscape gardening, and vegetable gardening. A number of courses relate to more than one of these subjects, and are therefore grouped here under the general designation of horticulture.

Elective Courses.

1. I. PLANT PROPAGATION. — For freshmen. This course serves as an introduction to the field of horticulture, emphasizing the methods and underlying principles involved in the propagation of horticultural plants.

2 class hours.

1 2-hour laboratory period, credit, 3.
Mr. LOWRY.

26. II. PLANT MATERIALS. (Formerly 25. I.) — For sophomores. Detailed study of deciduous and evergreen trees, with special reference to the form and character of mature trees, means of identification, natural associations, and uses of the various types of trees in landscape work.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Professor BLUNDELL.

51. I. PLANT MATERIALS. (Formerly 50. I. and 51. III.) — For juniors; seniors may elect. Detailed study of shrubs and woody vines, and their identification, with especial emphasis given to their adaptability to the various landscape uses, methods of handling, and care.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Professor BLUNDELL.

Prerequisite, Horticulture 26.

54. II. PLANT BREEDING. (Formerly 27. III.) — For juniors and seniors. A study of the principles of inheritance as applied to plants, together with a consideration of the methods used and problems involved in the improvement of horticultural crops.

3 class hours.

Credit, 3
Assistant Professor FRENCH.

76. II. ADVANCED PLANT BREEDING. (Formerly 55. III.) — For seniors. An advanced study of experimental methods, Mendelian analysis, fluctuating variations, mutations, sterility, disease resistance, etc. Laboratory work in the experimental breeding of plants.

2 class hours.

1 2-hour laboratory period, credit, 3
Assistant Professor FRENCH.

Prerequisite, Horticulture 54.

Landscape Architecture.

Professor WAUGH, Assistant Professor HARRISON, Assistant Professor ARMSTRONG, Mr. ROBERTSON.

The instruction in this department is aimed at two objectives: first, the contribution to general education; second, the preparation of men for the professional practice of landscape architecture. The former objective seems important from the fact that landscape architecture offers an excellent opportunity for the practical discussion of the principles underlying all the fine arts. In the professional courses students are prepared, as well as time permits, to begin work in landscape architecture which leads through field experience or post-graduate study to permanent establishment in that profession.

DRAWING.

Elective Courses.

25. **I. FREE-HAND DRAWING.** — For sophomores; juniors and seniors may elect. Lettering; free-hand perspective; sketching from models; laying flat and graded washes in water colors; water-color rendering.

2 3-hour laboratory periods, credit, 3.
Mr. ROBERTSON.

26. **II. MECHANICAL DRAWING.** — For sophomores; juniors and seniors may elect. Inking exercises; geometric problems; isometric projection; intersections; shades and shadows; parallel, angular, and oblique perspectives; perspective drawings of buildings. Students should have preparation in plane and solid geometry.

2 3-hour laboratory periods, credit, 3.
Mr. ROBERTSON.

31. **I. ELEMENTARY DESIGN.** (Formerly 30. I.) — For sophomore women. Elementary principles of design, with applications to costume design, interior decoration, etc.

3 2-hour laboratory periods, credit, 3.
Mr. ROBERTSON.

LANDSCAPE ARCHITECTURE.

Elective Courses.

51. **I. TOPOGRAPHY AND MAPPING.** (Formerly 50. I. and 51. II.) — For juniors. Reconnaissance, location, and topographical surveys and mapping. The data desired and the methods used in landscape architecture. Must be followed by Course 52.

3 3-hour laboratory periods, credit, 3.
Assistant Professor HARRISON.

Prerequisites, Drawing 25 and 26.

52. **II. ELEMENTS OF LANDSCAPE ARCHITECTURE.** (Formerly 51. II. and 52. III.) — For juniors. Engineering details; drive design, grade design, drainage, play areas, etc. Study of selected designs, examination of completed works, and, when possible, those under construction; field notes or written reports.

3 3-hour laboratory periods, credit, 3.
Assistant Professor HARRISON.

Prerequisites, Landscape Architecture 51 and either Horticulture 51 or advanced Mathematics.

54. **II. GARDEN DESIGN.** (Formerly 53. II) — For juniors. Fundamental principles of design with application to simple problems in the design of gardens and small home grounds.

3 3-hour laboratory periods, credit, 3.
Professor WAUGH.

Prerequisite, Landscape Architecture 51.

75. **I. THEORY OF LANDSCAPE ART.** — For seniors and graduates. The general theory and application of landscape study, including an examination of the principles underlying all the fine arts.

3 class hours.

Credit, 3.
Professor WAUGH.

76. **II. CIVIC ART.** — For seniors. The principles and applications of modern civic art, including land subdivision, city planning, city improvement, and rural improvement.

3 3-hour laboratory periods, credit, 3.
Assistant Professor ARMSTRONG.

Prerequisites, Landscape Architecture 51 and 52.

79. I. CONSTRUCTION AND MAINTENANCE (1933-34).—Alternates with Course 83. For juniors and seniors. Detailed instruction in staking out work; methods of construction and planting; organization, reporting, accounting, estimating, etc.
3 class hours.

Credit, 3.
Assistant Professor HARRISON.

83. I. ARCHITECTURE (1934-35). (Formerly 78. II.)—Alternates with Course 79. For juniors and seniors. The history of architectural development, the different historic types, with special reference to the underlying principles of construction and their relation to landscape design. Illustrated lectures, field trips, the study of details, preparation of plates.
3 class hours.

Credit, 3.
Assistant Professor HARRISON.

81. I. ADVANCED DESIGN.—For seniors. Grading and planting plans; garden designs and planting.

3 3-hour laboratory periods, credit, 3.
Assistant Professor ARMSTRONG.

Prerequisites, Landscape Architecture 51 and 52.

82. II. ADVANCED DESIGN.—For seniors. A series of problems in the design of estates, parks, and small property.

3 3-hour laboratory periods, credit, 3.
Assistant Professor HARRISON.

Prerequisite, Landscape Architecture 81.

Olericulture.

Professor VAN METER, Assistant Professor SNYDER and Mr. TUTTLE.

The object of the courses in olericulture is to train men (1) for the commercial branches of vegetable production and marketing, and (2) for the professional fields of research, extension work, and teaching.

Elective Courses.

25. I. GENERAL OLERICULTURE.—For sophomores; juniors and seniors may elect. A study of the factors affecting plant growth which are essential to a thorough understanding of vegetable plants and their culture, or for vocational teaching, or professional work other than teaching.
2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor SNYDER.

51. I. OLERICULTURE.—For juniors; seniors may elect. A study of the principles underlying vegetable production; the vegetable plant, soil and its treatment, plant nutrition, seed, and seedage.
2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor SNYDER.

52. II. OLERICULTURE.—For juniors; seniors may elect. A study of the principles underlying vegetable production; the vegetable plant and its responses to environmental conditions; methods of culture, marketing, storage, and pest control.
2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor SNYDER.

75. I. SYSTEMATIC OLERICULTURE.—For seniors. A critical study of variety identification; nomenclature and classification; variety improvement and seed sources; judging and exhibiting.
1 class hour.

2 2-hour laboratory periods, credit, 3.
Assistant Professor SNYDER.

76. II. GREENHOUSE CROPS AND PLANT GROWING.—For seniors. A study of the culture of vegetable plants under glass: in the greenhouse, plant house, hot-

bed, and cold frame; the growing of seedling plants both under glass and in the open for local, retail, or wholesale business.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor SNYDER.

78. II. COMMERCIAL OLERICULTURE. (Formerly 77. III.) — For seniors. A study of the problems in the commercial production of vegetables: general culture, fertilizers and manures, machinery, labor, handling, and marketing. One or more trips to important market or truck-growing sections are required. Twenty-five dollars will cover the cost of such trips.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor SNYDER.

Prerequisite, Olericulture 25 or 51 or 52.

Pomology.

Professor SEARS, Professor VAN METER, Assistant Professor FRENCH, Mr. ROBERTS.

It is the object of the courses in pomology to give the student a thoroughly practical training, so that he may be able to perform or supervise all of the different operations in connection with the growing and marketing of the various fruits. At the same time he is given a thorough grounding in the scientific principles on which the practical work is based, in order that he may better understand the various practices taught.

Elective Courses.

26. II. SMALL FRUITS. (Formerly 25. III.) — For sophomores; juniors and seniors may elect. A study of the growing of small fruits, including raspberries, blackberries, strawberries, currants, blueberries, and grapes, dealing with such questions as varieties, selecting a site for the plantation, soils, fertilizers, pruning, harvesting, marketing, etc.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor SEARS.

53. I. GENERAL POMOLOGY. — For juniors; seniors may elect. A study of the most improved practices in fruit production, including such questions as the selection of orchard sites and soils, laying out and setting the orchard, the structure and growth of fruit plants; the bearing habits, pruning, and training of fruits; fertilizers, pollination, winter injury, etc.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor SEARS and Mr. ROBERTS.

56. II. SPRAYING. — For juniors; seniors may elect. (a) Spraying materials, their composition, manufacture, and preparation for use; the desirable and objectionable qualities of each material; formulas used, cost, tests of purity. (b) Spraying machinery, including all the principal types of pumps, nozzles, hose, and vehicles; their structure and care. (c) Orchard methods in the application of the various materials used, with the important considerations for spraying each fruit and for combating each orchard pest. This course is designed especially to familiarize the student with the practical details of actual spraying work in the orchard.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Mr. ROBERTS.

75. I. SYSTEMATIC POMOLOGY (1934-35). — For juniors and seniors. A study of the more important kinds and varieties of fruits grown in the United States, their relationships and nomenclature. Particular emphasis is placed upon the identification, classification, and value of varieties including a study of the characters of the plant as well as the fruit. Given in alternate years.

1 class hour.

3 2-hour laboratory periods, credit, 4.

Assistant Professor FRENCH.

77. I. COMMERCIAL POMOLOGY (1933-34). — For juniors and seniors. The picking, handling, storing, and marketing of fruits, including a discussion of storage

houses, fruit packages, methods of refrigeration, grading, and packing. This course also considers the leading American and foreign centers of fruit production as they affect our own fruit industry through competition here or abroad. Given in alternate years.

2 class hours.

1 2-hour laboratory period, credit, 3.

Mr. ROBERTS.

81. I. 82. II. **ADVANCED POMOLOGY.** (Formerly 84. II and 85. III.) — For seniors. A consideration of the scientific principles governing the growth and behavior of fruit-bearing plants. Special attention is given to a critical survey of the more important research work in the field of pomology.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor VAN METER.

Prerequisite, Pomology 53.

83. I. 84. II. **SEMINAR.** (Formerly 80. I. 81. II. 82. III.) — For seniors majoring in pomology. Advanced study of problems relating to the business of fruit growing. Each student is assigned a major problem in lines of work in which he is particularly interested. He pursues his studies both by reading and research, and the materials obtained will be worked into theses, which are presented to the seminar for discussion. No lectures are given, but seminar meetings are held for one period each week.

1 class hour.

Credit, 1.

The DEPARTMENT.

DIVISION OF PHYSICAL AND BIOLOGICAL SCIENCES.

Professor GORDON.

Bacteriology and Physiology.

Professor GAGE, Professor BRADLEY, Miss GARVEY.

The courses in bacteriology and physiology have been planned to furnish: (1) general training in these subjects for all college students, (2) training for those interested in agriculture, industries, and domestic science, (3) training for prospective students of human or veterinary medicine and public health, (4) training for teachers and laboratory workers in the biological sciences. The courses in bacteriology include introductory and general courses, and advanced work, most of which precedes the applied bacteriology of agriculture, the arts, industry, domestic science, and public health. The course in physiology includes considerations of modern ideas on this subject in relation to human welfare.

BACTERIOLOGY.

Elective Courses.

31. I. **INTRODUCTORY AND GENERAL BACTERIOLOGY.** (Formerly 30. II.) — For sophomores, juniors, and seniors. Designed to make micro-organisms real and significant. The laboratory covers the use and proper care of the compound microscope, the preparation of culture media, methods of sterilizing equipment, the isolation and handling of pure cultures, simple and differential staining, studies on classification and cultural and biochemical studies on type species of pathogenic and non-pathogenic bacteria. Individual practice in the isolation and identification of bacterial forms is a required part of the laboratory assignment. The course aims to provide a basis for bacteriological study and interpretation and to furnish such material as will be valuable in understanding agriculture, domestic science, and public health problems.

2 3-hour laboratory periods, credit, 3.
Professor BRADLEY and Miss GARVEY.

52. II. **ADVANCED BACTERIOLOGY.** (Formerly 51. III.) — For juniors; seniors may elect. A continuation of Course 31. The identification and differentiation of bacterial species by morphological, cultural, physiological, and serological studies. The combined courses give to the student not only a comprehensive

picture of various forms of existing bacteria but develop a specialized technique for their cultivation, isolation, and identification.

2 3-hour laboratory periods, credit, 3.
Professor BRADLEY and Miss GARVEY.

Prerequisite, Bacteriology 31.

61. I. BACTERIOLOGY. (Public Health.) (Formerly 60. I. and 61. II.) — For juniors; seniors may elect. Considers the relation of the human body to its environment in the maintenance of health and the production of disease. The administration and organization of community health, the prevention or control of animal or human diseases of public health significance, are considered. A study of special community health problems and the relationship of these problems to social welfare is discussed.

Credit, 2.

Professor BRADLEY.

62. II. BACTERIOLOGY. (Public Health.) (Formerly 61. II. and 62. III.) — For juniors; seniors may elect. Sanitation and its relation to agriculture, industry, and public health. The microbiological features of air, water, soil, sewage, and refuse; industrial hygiene and the control of municipal and rural sanitary projects are considered.

Credit, 2.

Professor BRADLEY.

Prerequisite, Bacteriology 31 or 61.

81. I. 82. II. APPLIED BACTERIOLOGY. (Formerly 82. I. 81. II. and 81. III.) — For seniors; juniors may elect. These two courses covering a full year's work are designed to give the student a working knowledge of present-day applied bacteriology. The work in the laboratory is presented in three distinct sections: (1) soil, (2) food, (3) dairy. In soil, such subjects as the number and development of micro-organisms in different soils, factors influencing their growth and activity and changes wrought upon matter in the production of soil fertility, humification, nitrification, etc., receive attention. In food, a study of preservation, fermentation, spoilage and methods of sanitary examination are considered. In dairy, emphasis is placed upon modern methods for examining the sanitary quality of milk and milk products. Groups of bacteria normally present, abnormal and normal fermentations, effect of temperature and the rôle of milk in the transmission of disease are some of the subjects receiving special consideration.

2 3-hour laboratory periods, credit, 3.

Professor BRADLEY or Miss GARVEY.

Prerequisite, Bacteriology 31.

85. I. BACTERIOLOGY. (Serology.) (Formerly 75. I.) — For seniors. This course aims to supplement Course 52 and is planned to complete work essential for the advanced study in bacteriology and physiological science. This course includes the study, preparation, and standardization of such biological products as antigens, glutinins, precipitins, hemolysins, and complement-fixation bodies, and the use of the same in differential bacteriology and disease diagnoses. Consideration is also given to isohemagglutinins and their relation to human blood groups. Class limited to ten students.

2 3-hour laboratory periods, credit, 3.

Professor GAGE and Miss GARVEY.

Prerequisite, Bacteriology 52.

PHYSIOLOGY.

Elective Courses.

32. II. PHYSIOLOGY. (Formerly 33. III.) — For sophomores. This course presents the subject of physiology from the standpoint of its definition and modern scope. The laboratory demonstrations and practice are planned to meet best the requirements of a preliminary course in physiology. Basic anatomical knowledge essential to physiological interpretations will be considered. Exercises on neuro-

muscular physiology, blood, the circulatory system, and alimentation are included. This course is suited to the needs of students who elect only one course in physiology.

2 class hours.

1 2-hour laboratory period, credit,

Professor GAGE.

75. I. PHYSIOLOGY. (Formerly 63. I. and 64. II.) — For seniors; juniors may elect. The object of this course is to establish a broad basis for physiological study. The study and use of instruments is emphasized. The correlation of physics, chemistry, and biological science to the interpretation of functional activities is particularly considered. Aspects of nerve muscle physiology, hemodynamics, alimentation, intermediate metabolism, and the general plan and structure of the body pertaining to each division of the work will be considered.

2 class hours.

1 2-hour laboratory period, credit,

Professor GAGE.

76. II. PHYSIOLOGY. (Formerly 64. II. and 65. III.) — For senior juniors may elect. Physiology of internal and external respiration including studies on calorimetry and basal metabolism. This will be followed by work on the physiology of excretions. An introduction to the physiology of the special senses will be presented. This course is especially planned for students with a broad training in biological subjects.

2 class hours.

1 2-hour laboratory period, credit,

Professor GAGE.

Prerequisite, Physiology 75.

Botany.

Professor OSMUN, Associate Professor CLARK, Assistant Professor TORREY, Assistant Professor DAVIS, Mr. GILGUT, Miss ANDERSON.

The courses in botany are of three types: (1) those which present a knowledge of the principles of plant life both for their fundamental importance in this and other branches and for their general educational value; (2) those which have for their chief aim direct support of technical courses in agriculture and horticulture; (3) those providing broad, intensive training leading to specialization in the sciences. Courses in the last group also offer helpful training for students specializing in other sciences and in scientific agriculture.

Required Course.

2. II. INTRODUCTORY BOTANY. (Formerly 3. III. and 25. II.) — For freshmen. Morphology, anatomy, and physiology of seed plants. Also introduction to methods of identifying and classifying plants.

2 class hours.

2 2-hour laboratory periods, credit,

Assistant Professor TORREY.

Elective Courses.

25. I. CRYPTOGAMIC BOTANY. (Formerly 26. III. and 50. I.) — For sophomores; juniors and seniors may elect. Selected forms typifying the slime-molds, bacteria, algæ, fungi, lichens, liverworts, mosses and ferns. The course has a two-fold purpose: (1) it is intended for students who desire to extend their knowledge to the principal branches of the plant kingdom, thus rounding out a general course of which Course 2 constitutes the first part; (2) it is also planned as an introduction to certain advanced courses for which it is prerequisite.

1 class hour.

2 2-hour laboratory periods, credit,

Professor OSMUN.

Prerequisite, Botany 2.

51. I. DISEASES OF VEGETABLES. — For juniors and seniors. Study of the principal diseases of vegetables occurring in field and greenhouse, with especial attention to those important in Massachusetts, and consideration of combative measures. This course is planned and conducted primarily for students interested in vegetable gardening, but those intending to enter any branch of plant industry.

Part II.

try should find it of interest. Students who desire to extend their knowledge of plant diseases over a wider range of crops may do so by taking, in addition to this, any or all of Courses 52, 53, and 54.

1 class hour.

1 2-hour laboratory period, credit, 2.
Assistant Professor DAVIS.

Prerequisite, Botany 2.

52. **II. DISEASES OF FRUITS.**—For juniors and seniors. The plan of this course is similar to that of Course 51, but it is intended primarily for students interested in pomology.

1 class hour.

1 2-hour laboratory period, credit, 2.
Assistant Professor DAVIS.

Prerequisite, Botany 2.

53. **I. DISEASES OF FIELD CROPS.**—For juniors and seniors. The plan of this course is similar to that of Course 51, but it is intended primarily for students interested in field crops.

1 class hour.

1 2-hour laboratory period, credit, 2.
Assistant Professor DAVIS.

Prerequisite, Botany 2.

54. **II. DISEASES OF FLORICULTURAL CROPS, ORNAMENTALS, SHRUBS, AND TREES.**—For juniors and seniors. The plan of this course is similar to that of Course 51, but it is intended primarily for students interested in floriculture, nursery practice, and forestry.

1 class hour.

1 2-hour laboratory period, credit, 2.
Assistant Professor DAVIS.

Prerequisite, Botany 2.

56. **II. DISEASES OF CROPS.** (Formerly 55. III.)—For juniors and seniors. This is a general course in which representative diseases of the principal crops grown in Massachusetts are studied. The plan of the course is otherwise similar to that of Course 51. It is intended for students majoring in entomology and others who desire a brief, general course of this nature.

1 class hour.

1 2-hour laboratory period, credit, 2.
Assistant Professor DAVIS.

Prerequisite, Botany 2.

57. **I. MICROTECHNIQUE.** (Formerly 56. I.)—For juniors and seniors. A course in the preparation of microscopic mounts including the celloidin and paraffin methods and involving the use of microtomes and of differential stains.

2 2-hour laboratory periods, credit, 2.
Assistant Professor TORREY.

Prerequisite, Botany 25.

59. **I. 60. II. SYSTEMATIC BOTANY OF THE HIGHER PLANTS (1934-35).**—Alternate with Courses 61 and 62. For juniors and seniors. An intensive study of gymnosperms and angiosperms. Lectures deal with the interrelations of the flowering plants and with their ecology, distribution, and economic importance. Laboratory work consists of a critical study of types from the most important natural plant families. Particular emphasis is laid on the flora of Massachusetts. The department herbarium and greenhouses supply material of important tropical forms for study.

1 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor TORREY.

Prerequisite, Botany 2.

61. **I. 62. II. THE COMPARATIVE ANATOMY OF GREEN PLANTS (1933-34).**—Alternate with Courses 59 and 60. For juniors and seniors. In the lectures an intensive study is directed to the comparative anatomy of green plants from an evolutionary standpoint. Particular emphasis is laid upon the woody forms both living and extinct. Of the latter, the department is fortunate in possessing excellent sets of micro-preparations and lantern slides.

1 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor TORREY.

Prerequisite, Botany 25.

63. I. 64. II. **SYSTEMATIC MYCOLOGY.** — For juniors; seniors may elect. Morphology and development of typical species representing the orders and families of fungi; practice in identification, collection and preservation of fungi; system of classification; collateral reading.

1 class hour.

2 2-hour laboratory periods, credit,
Assistant Professor DAVIS.

Prerequisite, Botany 25.

75. I. 76. II. **PLANT PATHOLOGY.** — For seniors. Comprehensive study of diseases of plants; training in laboratory methods and technique, including culture work and artificial inoculation of hosts; miscellaneous diagnosis; study of literature and representative life histories of pathogens. Prepares for civil service, experiment station, and college work.

1 class hour.

4 2-hour laboratory periods, credit,
Professors OSMUN and DAVIS.

Prerequisite, Botany 25.

77. I. 78. II. **PLANT PHYSIOLOGY.** (Formerly 78. I. 79A. II. and 80A. III.) — For seniors; juniors may elect. Study of the factors and conditions of (a) plant nutrition, including the taking up of water and mineral substances, the assimilation of carbon and nitrogen, and the release of energy due to the processes of dissimilation; (b) plant growth, including the influence of internal and external factors on growth, the development of reproductive and vegetative organs; (c) plant movements, including those due to the taking up of water, and those of both motile and fixed forms in response to external stimuli. Weekly conferences are held, at which students report on assignments to original sources in the literature.

2 class hours.

3 2-hour laboratory periods, credit,
Associate Professor CLARK.

Prerequisites, Botany 25; Chemistry 51.

80. II. **PLANT PHYSIOLOGY.** (Formerly 79B. II. and 80B. III.) — For seniors; juniors may elect. A briefer course than Course 77 and 78, designed especially for students in horticulture, agronomy, and floriculture, and aiming to give the underlying principles of plant physiology which will supply the scientific basis for the manifold practices in the various fields of plant culture.

2 class hours.

2 2-hour laboratory periods, credit,
Associate Professor CLARK.

Prerequisite, Botany 2; Chemistry 30.

81. I. **PLANT ECOLOGY.** — For seniors. Study of plants in relation to the environment, with special emphasis on the newer field studies, which have given increasing insight into the physical and chemical factors as they influence growth and development in the field and the adaptability of plants to change in their normal environment. The various types of plant formations and successions are studied, as well as the mutual and antagonistic relations of certain plants.

1 class hour.

1 2-hour laboratory period, credit,
Associate Professor CLARK.

Prerequisite, Botany 2.

84. II. **THE FERNS (1933-34).** — For seniors; juniors may elect. Intensive study of the morphology, life-history, and taxonomy of the fern plants, with special attention to the fern flora of New England. Given in alternate years.

1 class hour.

1 2-hour laboratory period, credit,
Professor OSMUN.

Prerequisite, Botany 25.

Chemistry.

Professor CHAMBERLAIN, Professor PETERS, Assistant Professor SEREX, Assistant Professor FESSENDEN, Mr. PARROTT, Mr. REDMON.

In the courses in chemistry, emphasis is laid on both their educational and their vocational value. The courses in the freshman year deal with fundamental principles and give the student such an understanding of the subject

will enable him to appreciate the relation of chemistry to the other sciences and to agriculture and industry. The more advanced courses, including quantitative analysis, organic, physiological, and physical chemistry, are for those who intend to take up graduate study, to become teachers and workers in the allied sciences, or who desire to follow chemistry as a vocation. Those completing the undergraduate courses are fitted for positions in the agricultural industries — fertilizer, feed, and insecticide manufacture — as well as in other lines of industry, and in the State experiment stations, Federal departments, commercial laboratories, and in high school teaching. Postgraduate students are prepared for positions as teachers in colleges, and for more advanced positions in industry and in the experiment stations.

Required Courses.

1. I. 2. II. GENERAL CHEMISTRY. — For freshmen who have not had chemistry and who begin the subject in college. It presents an introduction to the fundamental chemical laws, together with a study of the typical acid- and base-forming elements and their compounds. The second semester contains some of the material given in Courses 3 and 4. Course 2 is optional with Orientation 2, second semester.

2 class hours.

2 2-hour laboratory periods, credit, 4.

Mr. PARROTT and Mr. REDMON.

3. I. 4. II. GENERAL CHEMISTRY. (Formerly 4. I. and 5. II.) — For freshmen who have had chemistry in preparatory or high school. A review of general chemistry with special emphasis on the fundamental laws and theories; periodic system, atomic structure, properties of solutions, ionization and equilibria. The laboratory work for the first semester includes exercises illustrating and emphasizing the subject matter of the course. In the second semester the laboratory work will be divided into two main types: the first half will consist of general cation analysis; the last portion of the semester the work will be of a synthetic character. Course 4 is optional with Orientation 2, second semester.

2 class hours.

2 2-hour laboratory periods, credit, 4.

Assistant Professors SEREX, FESSENDEN, and Mr. REDMON.

Elective Courses.

25. I. QUALITATIVE ANALYSIS. — *Basic*. — For sophomores. The systematic analysis of metallic salts, presented from the ionic viewpoint. A close study of the tests used in the separation and identification of the metals, and the application of these tests to unknown mixtures. This course should be taken by all intending to follow chemistry as a vocation.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Assistant Professor SEREX.

Prerequisite, Chemistry 2 or 4.

26. II. QUALITATIVE ANALYSIS. — *Acidic*. — For sophomores. A continuation of Course 25.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Assistant Professor SEREX.

30. II. ORGANIC AGRICULTURAL CHEMISTRY. — For sophomores; juniors and seniors may elect. Embraces the study of the most important groups of organic compounds of plants and animals, the composition of plants, the chemistry of plant growth, plants as food and as industrial material, the composition of animals, the chemistry of digestion, also the study of some of the products related to plants and animals, such as milk, butter, cheese, sugar, and alcohol. The treatment of the subject is general, avoiding (so far as possible) complicated chemical facts and relationships, and endeavoring simply to make the student acquainted with the general chemistry of plants and animals and agricultural processes and products.

3 class hours.

Credit, 3.
Mr. PARROTT.

51. I. 52. II. ORGANIC CHEMISTRY.—For juniors; seniors may elect. A systematic study, both from texts and in the laboratory, of the more important compounds in the entire field of organic chemistry. Especial attention is given to those compounds which are found in agricultural products or are manufactured from them. These include alcohols, acids, esters, fats, carbohydrates, and proteins. In the second semester compounds in the benzene series are considered. The work forms a foundation for courses in physiological chemistry and agricultural analysis, and is especially planned for those majoring in chemistry or the other sciences.

3 class hours.

2 2-hour laboratory periods, credit, 5

Professor CHAMBERLAIN.

Prerequisite, Chemistry 2 or 4. Chemistry 26 is prerequisite for those majoring in chemistry.

61. I. 62. II. QUANTITATIVE ANALYSIS.—For juniors; seniors may elect. The course includes gravimetric and volumetric analysis. The gravimetric determination of chlorine, sulfur and iron; volumetric analysis with acids and bases indicators, hydrogen-ion concentration and pH; analysis of limestone; the use of potassium dichromate, permanganate and iodide as reagents; chemical calculations and problems; water analysis.

1 class hour.

2 4-hour laboratory periods, credit, 5

Professor PETERS.

Prerequisite, Chemistry 25. Chemistry 26 is prerequisite for those majoring in chemistry.

75. I. PHYSICAL CHEMISTRY.—For seniors. A study of the fundamental theories and laws of physical chemistry, together with laboratory work which includes the important methods of physicochemical measurements.

3 class hours.

1 4-hour laboratory period, credit, 5

Assistant Professor SEREX.

Prerequisite, Chemistry 61.

79. I. PHYSIOLOGICAL CHEMISTRY. (Formerly 80. I.)—For seniors. Supplementary to Courses 51 and 52. For those who expect to take up scientific work in microbiology, botany, agronomy, animal husbandry, etc., and who have had Courses 51 and 52, it gives acquaintance with the chemistry of the physiological processes in plants and animals, by means of which some of the important organic compounds studied in Courses 51 and 52 are built up in the living organism or are used as food by it. In the lectures, the study of food and nutrition as related to both human and domestic animals is the principal subject. In the laboratory, experimental studies are made of both animal and plant materials and processes.

3 class hours.

2 2-hour laboratory periods, credit, 5

Professor CHAMBERLAIN.

86. II. REVIEW OF GENERAL CHEMISTRY.—For seniors. Primarily for students majoring in chemistry; others may elect by permission of the instructor. A knowledge of physical chemistry is desirable. The review of general chemistry is largely theoretical. Some subjects may be enlarged by special lectures, such as atomic structure, Werner's co-ordination theory, crystal structure as shown by X-rays.

2 class hours.

Credit,

Professor PETERS.

88. II. HISTORY OF CHEMISTRY. (Formerly 87. III.)—For seniors. A historical and biographical study of chemistry and chemists. The aim of the course is: (1) to give the student a comprehensive view of the science as a whole, through a study of the development of new ideas and the establishment of new theories and laws; and (2) to arouse an enthusiastic interest in the subject and an appreciation of the true spirit of scientific research, through a sympathetic presentation of the work and lives of the great chemists who have been the creators of the chemistry of today. The course will consist of lectures,

supplemented by systematic correlated reading and the preparation of reports or essays.

2 class hours.

Credit, 2.

Professor CHAMBERLAIN.

91. I. 92. II. INTRODUCTION TO RESEARCH. (Formerly 90. II. through 97. III.) — For seniors majoring in chemistry. The aim of the course is to give the student an opportunity to learn the purpose and methods of research. To each student is assigned some special subject or problem in one of the following fields of chemistry, viz., analytical, biochemical, inorganic, organic, physical. A careful study of the literature goes hand in hand with the working out of the problem in the laboratory. May be elected either semester, but if elected the first, the same subject must be continued in the second.

10 laboratory hours, credit, 5.

The DEPARTMENT.

Entomology, Zoology, and Geology.

Professor GORDON, Professor ALEXANDER, Professor CRAMPTON, Assistant Professor SWEETMAN, Assistant Professor WARFEL, Assistant Professor KELLOGG, Miss MORSE.

Courses in entomology are for two purposes: (1) The introductory courses aim to give the students a general knowledge of insects, particularly in their relations to man, his crops, his domestic animals, and his health. (2) More advanced courses are intended to train students desiring to specialize in entomology to become United States, State, or experiment station entomologists, teachers, foresters, tree wardens, entomologists connected with insecticide-manufacturing companies, consulting entomologists, or to occupy other positions where an expert knowledge of insects is called for. The beekeeping courses are offered with the following aims: (1) To meet the increase in vocational opportunities for the production of bees or honey as a business. (2) To study the beekeeping needs of fruit and truck-crop industries and the part that bees play in the pollination of flowers. (3) To acquaint the student with a recreational field of many phases, which can be made profitable.

The offerings in zoölogy comprise (1) two introductory courses intended primarily for sophomores, and (2) a number of distinct and somewhat special courses of a more advanced nature.

ENTOMOLOGY.

Elective Courses.

26. II. GENERAL AND FIELD ENTOMOLOGY. (Formerly 26. II. and 28. II.) — Primarily for sophomores intending to major in one of the biological sciences; other sophomores, juniors, and seniors may elect. For students who desire some knowledge of insects but cannot give more than one semester to the subject; also an introduction to the later courses for those who intend to follow entomology further. Two lectures throughout the semester are devoted to a brief survey of the entire field of entomology; structure and metamorphosis; the more important methods and materials for control of injurious species; a survey of the more conspicuous and important insects with particular attention to the fauna of New England. A laboratory period will be devoted to the preparation and formation of a collection of insects. Until about April 10th, this work will be done indoors and will consist of lectures and practical work preparatory to the field work after that date. Collections made by the students are studied in later courses.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor ALEXANDER.

51. I. PESTS OF SPECIAL CROPS. (Formerly 50. I.) — For juniors and seniors not majoring in entomology. The laboratory work in this course is largely individual. Students majoring in subjects other than entomology, who desire a more complete knowledge of the insects connected with their major lines of work, can obtain it through this course. Work consisting of a critical study of the important economic insect pests leads to an ability to recognize their different stages, and their work, and to a knowledge of the best methods

for their control. Work of this nature is available on the insects attacking field crops, market-garden crops, tree fruits, small fruits, shade trees and shrubs, forest trees, flowers, the domestic animals, household articles, and man.

2 2-hour laboratory periods, credit, 2
Assistant Professor KELLOGG.

Prerequisite, Entomology 26.

52. II. FOREST AND SHADE-TREE INSECTS. (Formerly 75. III.) — For juniors; seniors may elect. The lecture work deals with the principles and methods of controlling insects which attack forests and forest products, shade trees, etc. The laboratory periods are devoted to a study of the more important species, their identification, biology, and specific control measures. One entire Saturday for a field excursion is required.

1 class hour. 2 2-hour laboratory or field periods, credit, 3
Professor ALEXANDER.

Prerequisite, Entomology 26; 55 and 57 desirable.

53. I. PESTS OF SPECIAL CROPS. (Formerly 51. II.) — For juniors majoring in entomology; seniors may elect. Individual laboratory work on the more important insect pests in this country, together with the preparation and presentation of bulletin material on the same.

2 2-hour laboratory periods, credit, 2
Assistant Professor KELLOGG.

Prerequisite, Entomology 26.

54. II. ADVANCED ENTOMOLOGY. (Formerly 58. II. and 83. I.) — For juniors. Two distinct subjects, (1) Medical entomology: diseases of man and animals that are transmitted by insects and other arthropods; (2) Coccidology scale insects, their structure, habits; methods of mounting; identification.

2 class hours. 2 2-hour laboratory periods, credit, 4
Professor CRAMPTON.

Prerequisites, Entomology 26, 55, and 57.

55. I. 56. II. CLASSIFICATION OF INSECTS. (Formerly 52. I. 55. II. and 57. III.) — For juniors majoring in entomology. Laboratory work on the identification and classification of certain of the major orders of insects.

2 2-hour laboratory periods, credit, 2
Professor ALEXANDER.

Prerequisite, Entomology 26, accompanying Entomology 57.

57. I. INSECT MORPHOLOGY. (Formerly 53. I.) — For juniors majoring in entomology, and for a limited number of non-majors having the prerequisite. The lectures treat of the external anatomy of insects, particular stress being given to those parts needed in classification, for use in the parallel Course 55. In the laboratory, the external anatomy of the more important groups is studied, with emphasis on those characters used in the determination of insects.

1 class hour. 2 2-hour laboratory periods, credit, 3
Professor CRAMPTON.

Prerequisite, Entomology 26.

75. I. ADVANCED ENTOMOLOGY. (Formerly 59. II. and 76. I.) — For seniors. Two distinct subjects, (1) Internal anatomy: a study of the organology of insects; (2) Insect physiology: a consideration of the organs of the insect body and their functions, with especial reference to respiration and nutrition; the relationship of physiology to behavior, biochemistry, and biophysics.

3 class hours. 1 2-hour laboratory period, credit, 4
Professors CRAMPTON and SWEETMAN.

Prerequisites, Entomology 26, 54, and 57.

76. II. ADVANCED ENTOMOLOGY. (Formerly 78. III. and 84. III.) — For seniors. Two distinct subjects, (1) The immature stages of insects, with particular stress on their structure and recognition; (2) Classification of the minor orders of

insects. Taxonomy of all insect groups not earlier considered in Courses 55 and 56.
1 class hour. 2 2-hour laboratory periods, credit, 3.

Professors CRAMPTON and ALEXANDER.

Prerequisites, Entomology 26, 55, 56, and 57.

77. I. ADVANCED ENTOMOLOGY. — For seniors. Studies of the life history, habits, and methods of control of the important insect pests of the United States; recognition tests of these pests; a study of the literature; methods of bulletin and thesis preparation.

2 2-hour laboratory periods, credit, 2.

Professor ALEXANDER.

Prerequisites, Entomology 26, 52, 53, 54, 55, and 57.

78. II. INSECTICIDES AND THEIR APPLICATION. (Formerly 79. I.) — For seniors; qualified juniors may elect. Composition, preparation, and methods of application of insecticides; other control measures.

2 class hours.

Credit, 2.

Assistant Professor SWEETMAN.

Prerequisites, Entomology 26; Chemistry 51 and 52.

79. I. INSECT ECOLOGY AND BIOLOGICAL CONTROL. (Formerly 80. I. and 81. II.) — For seniors. The ecological work considers the relation of the insect to its environment, covering such topics as definitions, present status of the subject, factors of the environment, as temperature, moisture and light; biotic potential; environmental resistance; terrestrial and aquatic insect communities; applied ecology. In the second part of the semester, the problem of biological control is begun, this treating of the types of parasitic organisms, insect parasites; predators; and similar matter.

3 class hours.

Credit, 3.

Assistant Professor SWEETMAN.

Prerequisite, Entomology 26.

80. II. BIOLOGICAL CONTROL AND INSECTARY PRACTICE. (Formerly 81. II. and 82. III.) — For seniors. A continuation of Course 79. The work on biological control is concluded, discussing problems such as insect diseases; other organisms as parasites of insects; the natural ecological status of insect parasitism and the economic status of parasites. In the laboratory, the students are assigned individual problems which are conducted on a research basis. These problems may deal with any of the following phases: physiology, insecticides, ecology, biological control, or applied entomology.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Assistant Professor SWEETMAN.

Prerequisite, Entomology 79.

90. II. EVOLUTION. — For seniors; juniors may elect. In order to demonstrate the universal scope and operation of the laws of evolution, the course includes a brief sketch of the probable origin and evolution of matter as viewed in the light of modern physical and chemical research; the evolution of the solar system, leading to the formation of the earth; the changes in the earth, preparatory to the production of life; the physical and chemical basis of life; the probable steps in the formation of living matter, and the theories concerning it; the evolution of living things; the developmental history of man, and of the races of mankind; the evolution of human intelligence, languages, culture, institutions, etc., and man's probable future in the light of his past development. Especial consideration is given to the factors of evolution, the basic principles of heredity, variation, and similar topics, with particular reference to their application to human welfare; and the recent contributions in the field of entomology to the advancement of our knowledge of these fundamental principles are briefly reviewed.

2 class hours.

Credit, 2.

Professor CRAMPTON.

BEEKEEPING.

Elective Courses.

66. II. INTRODUCTORY BEEKEEPING. (Formerly 65. III.) — For juniors and seniors. In the classroom a study is made of the evolution of the bee, its anatomy and physiology, the races and types of bees, the history of beekeeping, the organization of the colony, and the life of the individual bee. Work in the laboratory and apiary will include a study of the equipment necessary for beekeeping, pollination and pollen-producing plants, nectar-producing plants, and spring management of colonies. Each student will be given an opportunity to observe and handle bees for himself. During the first half of the semester lecture will be substituted for some of the laboratory periods. To be complete, this course should be followed by Course 85.

1 class hour.

2 2-hour laboratory periods, credit,
Assistant Professor KELLOGG.

85. I. INTRODUCTORY BEEKEEPING. — For seniors. A continuation of Course 66. The classroom work consists of lectures and readings in fall management, wintering of colonies, care of the honey crop, the characteristics of honey and wax, and bee diseases. Work in the apiary will include fall management of colonies, wintering, and in the laboratory studies will be made on the physical and chemical characteristics of honey and wax, with some simple biometrical problems.

2 class hours.

1 2-hour laboratory period, credit,
Assistant Professor KELLOGG.

Prerequisite, Entomology 66.

86. II. ADVANCED BEEKEEPING. — For seniors. Advanced studies are made in important beekeeping problems, such as anatomy and physiology; bee behavior, diseases, queen-rearing; pollination and biometry. Students taking this course will be encouraged to carry on individual work in their particular problems.

1 class hour.

2 2-hour laboratory periods, credit,
Assistant Professor KELLOGG.

Prerequisites, Entomology 66 and 85.

ZOOLOGY.

Elective Courses.

25. I. ELEMENTS OF ZOOLOGY. (Formerly 26. I. and 27. II.) — For sophomores; juniors and seniors may elect. This course or its equivalent is prerequisite to all other courses in zoology or entomology. It consists of an elementary treatment of the principles of animal biology, and provides a measure of preparation for such subsequent studies as assume some acquaintance with the phenomena of animal life.

2 class hours.

1 2-hour laboratory period, credit,
Professors GORDON, WARFEL, and Miss MORSE.

26. II. FORMS OF INVERTEBRATE ANIMALS. (Formerly 28. III.) — Required of sophomores specializing in zoology and entomology; other sophomores, juniors, and seniors may elect. This course is designed chiefly to afford a synthetic view of the main groups of non-vertebrated animals, and is intended for future students of entomology, zoology, and general biology.

1 class hour.

2 2-hour laboratory periods, credit,
Assistant Professor WARFEL.

Prerequisite, Zoology 25.

50. II. ELEMENTS OF MICROSCOPIC TECHNIQUE. — For juniors; seniors and graduate students may elect. Open to students upon consultation with the department. The course consists of a series of practical exercises in preparing animal tissues for microscopic examination, and a study of principles and methods involved in such work.

2 2-hour laboratory periods, credit,
Miss MORSE.

Prerequisite, Zoology 25.

65. I. 66. II. COMPARATIVE VERTEBRATE ZOOLOGY. — For juniors, seniors, and graduate students. The work is arranged to run through the year and is adapted to the needs of premedical students. The laboratory work deals briefly with the simple Chordates, with particular emphasis on Amphioxus, treats the various organs and organ systems of the dogfish in detail, and proceeds as soon as practical to the dissection of the mammal. Features of development in vertebrates and comparisons with other vertebrate forms, so far as these are essential to an understanding of basic features of vertebrate morphology and mammalian structure, are treated in classroom and laboratory discussions.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Assistant Professor WARFEL.

Prerequisite, Zoölogy 25.

69. I. 70. II. COMPARATIVE INVERTEBRATE ZOOLOGY. — For juniors, seniors, and graduate students. The course is designed to give a broader survey of the field of invertebrate zoölogy than is offered in Course 26, and is intended for those who are especially interested in this field. Marine, fresh water, and terrestrial forms, living or fossil, may be included. Course 26 is not prerequisite, but for students who have not had Course 26 a somewhat different program will be arranged to run through the year. Those who have had Course 26 may arrange to take work running through the year, or for either semester. The course in invertebrate zoölogy may be supplemented by work in general ecology in Courses 91 and 92.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Miss MORSE.

Prerequisite, Zoölogy 25.

75. I. 76. II. VERTEBRATE EMBRYOLOGY. — (For seniors and graduate students; juniors may elect. Students are admitted to these courses only upon consultation with the department. The work is arranged to run through the year. Students may take Course 75 without continuing with Course 76, but may not elect Course 76 without having had Course 75 or its equivalent. The work of the first semester reviews general embryological principles and deals with the chief features of development in Amphioxus, the frog, and early stages of the chick. The work of the second semester deals with the study of the later stages of the chick and early stages of development in mammals.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Professor GORDON.

Prerequisite, Zoölogy 25.

80. II. ORNITHOLOGY. (Formerly 79. III.) — For juniors; seniors and others may elect. The orders of birds, based on the American Ornithologists' Union Check-List of North American Birds; ordinal characters of birds; families and family characters of Passerine birds; origin and relationships, adaptive radiation, migrations, distribution, and habits of birds. This course is conducted by means of lectures, practical exercises in the museum, assigned reading, and studies in the field.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Professor GORDON.

Prerequisite, Zoölogy 25.

91. I. 92. II. SPECIAL PROBLEMS IN ZOOLOGY OR ENTOMOLOGY. (Formerly 85. I. 86. II. 87. III.) — For seniors and graduate students; juniors may elect. Juniors and seniors who are especially interested in the field of zoölogy, and graduate students who wish to take a minor in this subject, may arrange for special work.

Credit, 2 or 3.

The DEPARTMENT.

Prerequisite, Zoölogy 25.

GEOLOGY.

Elective Courses.

Each of the courses described below is distinct, and a student may take only one, or any two, or all three, in any sequence. Course 28 is recommended for those

who plan to take only one course in physical geology; it is also considered desirable as a first course for those who plan to take either petrology, or historical geology or both.

28. II. INTRODUCTORY GEOLOGY. (Formerly 51. II.) — For sophomores juniors and seniors may elect. This is a general course in physical geology. It deals in an elementary way with the different classes of rocks, and treats more fully of geological agents and processes, and the history of development of land forms.

2 class hours.

1 2-hour laboratory period, credit, 3
Professor GORDON.

51. I. ELEMENTS OF PETROLOGY. (Formerly 50. I.) — For juniors, seniors and graduate students. The various important rock-forming minerals are studied first. Then follows a discussion of the different kinds of igneous, sedimentary, and metamorphic rocks, with consideration of their petrographic distinctions, mode of occurrence, and structural features. This course assumes an elementary knowledge of chemistry.

1 class hour.

2 2-hour laboratory periods, credit, 4
Professor GORDON.

52. II. HISTORICAL GEOLOGY. — For juniors, seniors, and graduate students. In this course the principal events in the physical history of North America are reviewed in chronological sequence, with a survey of the plant and animal life of the past.

3 class hours.

Credit,
Professor GORDON.

Mathematics and Civil Engineering.

Professor OSTRANDER, Professor MACHMER, Assistant Professor MOORE, Mr. BOUTELLE.

The work of the freshman year is required. It is intended to furnish the necessary drill and groundwork needed for many of the scientific and practical courses of other departments. Thoroughness and accuracy are insisted upon. The advanced work in mathematics is taught from a practical standpoint, and many of its applications to other subjects are given. The courses in surveying and civil engineering are given to furnish the groundwork for a professional career. Special emphasis is given to the subjects bearing on highway construction and maintenance.

Required Courses.

1. I. HIGHER ALGEBRA. — For freshmen. A brief review of radicals, quadratic equations, ratio and proportion, and progressions; graphs, binomial theorem, summation of series, variation, determinants, permutations and combinations, probability, logarithms, and theory of equations.

3 class hours.

Credit,

Professors MACHMER, MOORE, and Mr. BOUTELLE.

2. II. PLANE TRIGONOMETRY AND MATHEMATICAL ANALYSIS. — For freshmen. The trigonometric functions as lines and ratios, proofs of the principal formulae, transformations, inverse functions, use of logarithms, the applications to the solution of right and oblique triangles, practical applications, trigonometric equations. This is followed by a brief study of some of the different modes of variation, finding the exact or approximate relations (equations) between the varying quantities, particularly as illustrated by the use of the graph. Also a review of methods of computation, with special emphasis on short processes and the making of close approximations, and the use of the slide rule.

3 class hours.

Credit.

Professors MACHMER, MOORE, and Mr. BOUTELLE.

Elective Courses.

25. I. PLANE SURVEYING. (Formerly 26. II.) — For sophomores; juniors and seniors may elect. The elements of the subject, including the adjustment and use of the usual instruments. Textbook, lectures, and field work.

2 class hours.

1 2-hour laboratory period, credit,
Professors OSTRANDER and MOORE

27. **I. ANALYTICAL GEOMETRY.** (Formerly 28. I.) — For sophomores; juniors and seniors may elect. A discussion of the line, circle, conic sections, and the higher plane curves.

3 class hours.

Credit, 3.

Professors MACHMER, MOORE, and Mr. BOUTELLE.

28. **II. DIFFERENTIAL CALCULUS.** (Formerly 29. II.) — For sophomores and juniors; seniors may elect. The basic ideas and methods of the differential calculus. The course aims to give the student a realization of the power of the calculus as an instrument for dealing with problems of geometry and the physical sciences.

3 class hours.

Credit, 3.

Assistant Professor MOORE.

Prerequisite, Mathematics 27.

51. **I. DIFFERENTIAL AND INTEGRAL CALCULUS.** (Formerly 30. III.) — For juniors; seniors may elect. A continuation of Mathematics 28 into the field of the integral calculus, with special emphasis on applications to problems of physics and chemistry.

3 class hours.

Credit, 3.

Assistant Professor MOORE.

Prerequisite, Mathematics 28.

53. **I. ELEMENTARY STRUCTURES.** — For juniors; seniors may elect. An elementary course in the stresses in roofs and bridges. Textbook and lectures.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor OSTRANDER.

54. **II. ROADS AND RAILROADS.** (Formerly 77. II.) — For juniors; seniors may elect. Highway surveying, curves, earthwork, pavements. Textbook, lectures, and field work.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor OSTRANDER.

Prerequisite, Mathematics 25.

56. **II. MATERIALS OF CONSTRUCTION, FOUNDATIONS, AND MASONRY.** (Formerly 76. I.) — For juniors; seniors may elect. Textbook and lectures.

3 class hours.

Credit, 3.

Professor OSTRANDER.

75. **I. HYDRAULICS AND WATER SUPPLY.** — For seniors. Textbook and lectures.

3 class hours.

Credit, 3.

Professor OSTRANDER.

76. **II. SEWERS AND SANITARY ENGINEERING.** — For seniors. Textbook and lectures.

3 class hours.

Credit, 3.

Professor OSTRANDER.

Prerequisite, Mathematics 75.

91. **I.** 92. **II. DIFFERENTIAL AND EMPIRICAL EQUATIONS.** — For seniors. A course dealing with the methods of solution of the simpler forms of differential equations and their applications, especially to chemical reactions, and the determination of empirical equations from observed data. Textbook and lectures.

2 class hours.

Credit, 2.

Assistant Professor MOORE.

Prerequisite, Mathematics 51.

Physics.

Professor POWERS, Assistant Professor ALDERMAN.

The courses in this department present a basic study of the physical laws and phenomena of nature with special emphasis on the applications of the principles studied. These courses furnish satisfactory training for pre-medical

students and for prospective teachers in secondary schools. Courses 25 and 26 constitute a study in general physics. The other courses afford opportunity for more advanced and individual work.

Elective Courses.

25. **I. MECHANICS AND HEAT.** (Formerly 25. I. and 27. III.) — For sophomores; juniors and seniors may elect. This course is largely a study of the following and related topics: equilibrium of bodies; forms of energy and work; motion; fluids; surface tension; molecular phenomena; elasticity; wave-motion; thermometry; expansion; hygrometry; transmission of heat; changes of state; radiation.
2 class hours.

1 2-hour laboratory period, credit, 3.
The DEPARTMENT.

26. **II. LIGHT AND ELECTRICITY.** (Formerly 26. II. and 27. III.) — For sophomores; juniors and seniors may elect. Includes wave-theory of light; optical instruments; analysis of light; interference; polarization; magnetism; electrostatics; production and properties of electric currents; electrical appliances and machines; oscillatory circuits; vacuum tubes; and related topics.
2 class hours.

1 2-hour laboratory period, credit, 3.
The DEPARTMENT.

51. **I. 52. II. MAGNETISM, ELECTRICITY, PHOTO-ELECTRICITY, THERMIONICS, AND APPLICATIONS.** — For juniors and seniors. Course 51 deals largely with direct currents, Course 52 with alternating currents, applications of thermionics, and photo-electricity. These courses are planned to give the student a good grounding in theory and methods of measurement in the subjects indicated, which are useful in many fields of investigation. Modern methods are stressed and instruments of precision are used.
2 class hours.

1 2-hour laboratory period, credit, 3.
Professor POWERS.

Prerequisites, Physics 26 and Mathematics 28 for Course 51; Physics 51 for Course 52.

53. **I. OPTICS.** (Formerly 55. III.) — For juniors; seniors may elect. An intermediate course in the theory of light. Work in geometrical and physical optics is done. Precision instruments are used in the laboratory.
2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor ALDERMAN.

Prerequisite, Physics 26; Mathematics 28.

54. **II. THERMODYNAMICS.** — For juniors; seniors may elect. A study of heat exchanges and energy changes due to heat in systems of matter. The subject material and experimental methods are useful in other branches of science.
2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor ALDERMAN.

Prerequisite, Physics 25; Mathematics 28.

75. **I. 76. II. ADVANCED EXPERIMENTAL WORK IN SELECTED TOPICS.** — For seniors. These courses are largely experimental, and the subject matter is adapted to the needs of the individual student. The research viewpoint is emphasized.

3 2-hour laboratory periods, credit, 3.
Professor POWERS.

Prerequisites, Physics 25, 26; 51 and 52; or 53 and 54; Mathematics 28 and 51.

85. **I. 86. II. MODERN PHYSICS.** — For seniors. Typical subjects studied are theories of the atom, radiation, quantum theory, spectra, X-ray analysis, etc.
3 class hours.

Credit, 3.
Professor POWERS.

Prerequisites, Physics 25, 26, 51, 53, 54, or equivalent; Mathematics 28 and 51.

Veterinary Science.

Professor LENTZ.

The courses in veterinary science are arranged to meet the needs of students who expect to follow practical agriculture; of prospective students of veterinary and human medicine; and of teachers and workers in the biological sciences.

Elective Courses.

51. **I. VETERINARY HYGIENE.** (Formerly 50. II.) — For juniors; seniors may elect. Students are acquainted with the influences which air, water, feed, disposal of animal waste material, etc., may have upon the health of animals, and upon the health of those who use both animals and animal products.

3 class hours.

Credit, 3.

Professor LENTZ.

75. **I. COMPARATIVE VETERINARY ANATOMY.** — For seniors; juniors may elect. The structure of the horse is studied and the structures of other farm animals are compared with it. This is a lecture and demonstrational course.

3 class hours.

Credit, 3.

Professor LENTZ.

76. **II. GENERAL VETERINARY PATHOLOGY.** (Formerly 76. II. and 77. III.) — For seniors; juniors may elect. A study of fundamental, general pathological conditions; inflammation, fever, etc., and application of principles to etiology, pathogenesis, and prophylaxis of communicable and non-communicable diseases of domesticated animals.

3 class hours.

Credit, 3.

Professor LENTZ.

88. **II. AVIAN PATHOLOGY.** (Formerly 89. I.) — For seniors. Consists of lectures devoted to principles of pathology, with specific application to avian diseases. Etiology, pathogenesis, and prophylaxis will be emphasized.

3 class hours.

Credit, 3.

Professor LENTZ.

Prerequisites, Bacteriology 31 and 52; Physiology 75 and 76.

DIVISION OF SOCIAL SCIENCES.

Professor MACKIMMIE.

Agricultural Economics.

Professor CANCE, Professor LINDSEY, Assistant Professor JEFFERSON, Mr. SMART, Miss FOLEY.

Instruction in agricultural economics is designed to show that the agricultural industry justifies its existence chiefly as a supplier of food and raw textile materials for human consumption; that agricultural success is measured by production of values as well as by production of volume of agricultural products; that the goal of the farmer is the largest net profit over a long-time period; that agricultural production includes all processes from purchase of seed and fertilizer and preparation of seedbed until the product reaches the consumer, including collection, transportation, storage, financing, packing, handling, and selling; that a knowledge of the business of agriculture and agricultural commerce is today more necessary than a knowledge of agricultural technique. The work of this department is conducted by means of lectures, readings, and research in both library and field.

Elective Courses.

26. **II. ECONOMIC GEOGRAPHY.** — For sophomores. The purpose of this course is to present to the student, the geographic distribution of natural and human resources, the physiographic bases of the agricultural, manufacturing, and allied industries, their economic characteristics, and the physical and social reasons for their geographic location.

3 class hours.

Credit, 3.

Miss FOLEY.

51. I. THE ECONOMICS OF PRODUCTION. (Formerly 50. I. and 51. II.) — For juniors; seniors may elect. A presentation of the industrial relationships and the principles upon which the production of economic goods is based. The choice and use of land, equipment, and labor in agriculture and the manufacture of derivative products and the significant related cost and production problems are considered.

3 class hours.

Credit, 3.

Professor CANCE.

52. II. THE FUNDAMENTALS OF COOPERATION. — For juniors; seniors may elect. The history, principles, and business relations of agricultural co-operation. (1) A survey of the development, methods, and economic results of farmers' organizations and great cooperative movements; (2) the business organization of agriculture abroad, and the present aspects and tendencies in the United States; (3) the principles underlying successful cooperative endeavor among farmers, and practical working plans for cooperative associations, with particular reference to purchase of supplies and the marketing of perishable products. Lectures, text, assigned readings, and practical exercises.

3 class hours.

Credit, 3.

Professor CANCE.

53. I. MARKETING AND MARKETING PROBLEMS. — For juniors; seniors and graduate students may elect. A study of the forces and conditions which determine prices and the mechanism, methods, and problems concerned with transporting, storing, and distributing farm products and related goods. Supply and demand, course of prices, terminal facilities, the middleman system, speculation in agricultural products, protective legislation, the retail market, and direct sales are taken up. The characteristics and possibilities of the New England market are given special attention. Lectures, readings, assigned studies, and field work. Class trip to Boston or Springfield for market inspection, at an estimated expense of five to ten dollars.

3 class hours.

Credit, 3.

Professor CANCE.

55. I. ECONOMICS OF CONSUMPTION. (Formerly 54. I.) — For juniors; seniors and graduate students may elect. The purpose of this course is a consideration of the importance of consumption in modern industry and commerce. It includes a study of the laws of consumption, standards of living, sources and factors determining family incomes, and of the administration of these incomes as shown by the expenditures of the nation and of various groups. The relation of consumption to the problems of population and to the development of society is also studied. Lectures, assigned readings, and class discussions.

3 class hours.

Credit, 3.

Miss FOLEY.

56. II. ADVERTISING AND SALESMANSHIP. (Formerly 83. I. and 84. II.) — For juniors; seniors may elect. This course is a practical study of the technique of present-day market distribution of agricultural and other products. Emphasis is placed on the functions of advertising, and upon the steps involved in the preparation of the finished advertisement. The principles and problems of selling goods and services are analyzed and discussed and the assistance of advertising to the salesman is stressed.

3 class hours.

Credit, 3.

Miss FOLEY.

75. I. CURRENT ECONOMIC PROBLEMS. (Formerly 77. I.) — For seniors and graduate students; juniors may elect. An advanced course for those desirous of studying more intensively some current economic problems. Studies in economic philosophy and the economic aspects and consequences of progress in the physical and biological sciences, current economic questions, agricultural legislation, and government aids and subsidies are some of the problems discussed. Particular attention will be given to economic problems relating to New England. Students will be encouraged to pursue lines of individual interest.

3 class hours.

Credit, 3.

Professor CANCE.

76. **II. PRINCIPLES OF TRANSPORTATION.**—For seniors and graduate students; juniors may elect. The development of highway, waterway, and railway transportation, and its relation to the agricultural and industrial development of the country; the principles governing the operation and control of transportation agencies; present-day problems relating to the shipment of farm products, rates, facilities, and services; methods of reducing wastes in transportation; the economics of the good roads movement and of motor transportation. Lectures, text, and field work.

3 class hours.

Credit, 3.
Professor CANCE.

77. **I. ECONOMICS OF FOREIGN TRADE.** (Formerly 87. III.)—For seniors; juniors and graduate students may elect. A study of the principles and practices of international trade, including a survey of historical trends of the foreign trade of the United States, particularly with reference to agricultural products; the business methods of foreign traders; foreign exchange; and the efforts made by governments and business groups to influence foreign trade. Textbook, lectures, class discussions, and class trip to Boston at an estimated expense of twelve to fifteen dollars.

3 class hours.

Credit, 3.
Miss FOLEY.

78. **II. MONEY, BANKING, AND AGRICULTURAL CREDIT.**—For seniors; juniors and graduate students may elect. The development of the monetary and banking systems of the United States; the operation of various types of financial institutions; the use of credit in economic production and the development, organization, and operation of agricultural and industrial credit institutions.

3 class hours.

Credit, 3.
The DEPARTMENT.

79. **I. PRINCIPLES AND METHODS OF STATISTICS.**—For seniors and graduate students; juniors may elect. Methods of collecting, analyzing, interpreting, and presenting statistical information. The application of statistical methods to the fields of agriculture, economics, education, business, and industry is emphasized through practical laboratory problems.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Professor LINDSEY.

80. **II. ADVANCED STATISTICS.** (Formerly 85. II. and 86. III.)—For seniors and graduate students. This course deals with the use of statistics in the analysis of economic data with special emphasis upon prices; the use of multiple correlation methods in the study and analysis of prices of agricultural and certain other commodities.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Professor LINDSEY.

81. **I. ELEMENTARY BUSINESS ACCOUNTING.** (Formerly 88. III.)—For seniors; juniors may elect. This course aims to give the student an elementary working knowledge of the principles underlying the accounting system in the gathering, analysis, and interpretation of accounting data, and the methods used in accounting and preparing the usual types of business statements for individual proprietorship businesses and partnerships. The managerial uses of accounting as a means of business control are the keynote of the course.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Professor LINDSEY.

82. **II. ADVANCED BUSINESS ACCOUNTING.**—For seniors. This course covers the problems of corporation accounting and accounting for cooperative organizations. Considerable time is spent on problems in amortization, depreciation, and the preparation, analysis, and interpretation of financial statements.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Professor LINDSEY.

84. **II. RURAL AND BUSINESS LAW.** (Formerly 75. II.) — For seniors; juniors may elect. Land, titles, public roads, rights incident to ownership of live stock, contracts, commercial paper, and distinctions between personal and real property. Text, written exercises, lectures, and class discussions. 3 class hours.

Credit, 3.
Mr. SMART.

91. **I. 92. II. SEMINAR.** (Formerly 80. I. 81. II. 82. III.) — For seniors and graduate students. Research in agricultural economics and history; problems of New England agriculture. Library work and reports. If desirable some other topic may be substituted.

1 or 2 2-hour conference periods, credit, 1 to 3.
The DEPARTMENT.

Education.

Professor WELLES, Professor GLICK, Professor DeSILVA, Mr. HEALD,¹ Mr. CARPENTER.

The primary aim of the department is to be of maximum service to the students who desire to engage in some form of educational work and whose ability, personality, and attitude indicate that they are fit candidates. Many of the courses are elected because of their cultural values, also. Those students who have completed properly selected groups of courses may be recommended to the State Department of Education to receive a teacher's certificate. This applies to the general field of teaching in the high schools and to the special field in Vocational Agriculture and related subjects. Students desiring state approval as teachers of Vocational Agriculture or related subjects should confer with the head of the department as early as possible to insure a desirable range of preparation, including farm experience, a part of which may be gained after entering college. They should also become acquainted with the State Supervisor for Agricultural Teacher-Training, who approves candidates for positions in special schools and departments of agriculture in high schools. A teacher-training certificate will be awarded by the Division of Vocational Education to students who qualify as to farm experience, technical subjects, and educational courses as advised (regularly courses 65, 71, 78, and 81).

EDUCATION.

Elective Courses.

65. **I. PRINCIPLES AND METHODS OF TEACHING.** (Formerly 51. I. and II.) — For juniors; seniors may elect. The course is intended for those students who expect to become teachers. Others must have the consent of the instructor before registering. Case studies are used to illustrate methods and classroom management. Current educational literature relating to methods of teaching, and certain books and problems are assigned for reading and report. Some attention by groups is given to the problems of teaching specific subjects of the high school curriculum during the last weeks of the semester. A basis text is used. By preference Course 51 should precede this. Advised for candidates for the State Vocational Teacher-Training Certificate. 3 class hours.

Credit, 3.
Professor WELLES.

68. **II. HISTORY OF EDUCATION.** — For juniors and seniors. The growth of education is traced in its development from the earliest efforts in education to the present complex form. Historic influences upon educational ideals, studies, and modes of teaching will be reviewed as cause and background for advancement. A basic text and other references will be used. 3 class hours.

Credit, 3.
Professor WELLES.

71. **I. VOCATIONAL EDUCATION IN AGRICULTURE.** (Formerly 76. I. and II.) — For juniors; seniors and graduate students may elect with permission of the head of the department. The course demands certain prerequisites of experi-

¹ State Agent for Agricultural Teacher-Training representing the State Department of Education in the administration of vocational education acts.

ence and objective which make permission necessary. It is the first of the series (71, 78, 81) and gives a survey of vocational education and an introduction to the work of teaching agriculture in secondary schools, with essential information and observation preparatory to the apprenticeship course. Required of candidates for the agricultural teacher-training certificate.

Credit, 3.

Professor WELLES and VOCATIONAL DIVISION
OF STATE DEPARTMENT OF EDUCATION.

76. II. METHODS IN EXTENSION TEACHING. (Formerly 77. III.) — For seniors; juniors and others qualified may elect. Admission after consultation with the instructor in charge. The course deals with various phases of extension work and the methods by which this work is accomplished. The specific lines are those of the state director, state leaders, agricultural and home economics specialists, and county agricultural, home demonstration, and 4-H club agents. The different phases of the work will be discussed by members of the extension staff who are specialists in their particular lines. Special reports and several visits to county extension meetings are required. The course will be offered by the Extension Service.

2 class hours.

Credit, 2.

Professor WELLES and Mr. CARPENTER.

78. I. and II. APPRENTICE TEACHING. — For juniors or seniors qualified. Arrangement with the head of the department is required. Under certain conditions a student may be absent from college a semester for practice teaching. This is an opportunity to teach a regular schedule, for the most part, and usually there is the understanding that the relation to the school is that of an assistant teacher. This is part of the required preparation leading to the state certificate for teachers of agriculture.

Credit, 4.

Professor WELLES and VOCATIONAL DIVISION
OF STATE DEPARTMENT OF EDUCATION.

80. I. and II. SUPERVISED TEACHING. — For seniors; qualified juniors may be admitted. No student will be enrolled for the course except by arrangement with the head of the department. Some opportunities for practice are available. A limited amount of study of teaching by observing is permitted. Special professional reading, assigned and optional, is required. A conference is required each week for reporting on the work each is doing and for general discussion. The amount of credit depends upon the amount and character of the work. A thesis covering all work in the course during the semester is required.

1 class hour.

2 to 4 laboratory hours, credit, 1-2.

Professor WELLES.

81. I. TECHNIQUE OF TEACHING AGRICULTURE. (Formerly 82. II.) — For seniors and others qualified, by arrangement with the head of the department. By preference this course follows Courses 71 and 78. It covers the material, methods, policies, and special requirements of the state for teaching agriculture and related subjects in vocational schools. Required of candidates for the agricultural teacher-training certificate.

2 class hours.

Credit, 2.

Professor WELLES and VOCATIONAL DIVISION
OF STATE DEPARTMENT OF EDUCATION.

84. II. SECONDARY EDUCATION. (Formerly 75. III.) — For seniors; juniors may elect. The course has two main objectives: (1) To give a perspective of the high school as to its aims, relations, organization, and functions; (2) To present in some detail the agencies and operations that carry these out through the curricula, schedules, and extra-curricular activities. A basic text is used with supplementary reading and problem assignments.

3 class hours.

Credit, 3.

Professor WELLES.

PSYCHOLOGY.

Elective Courses.

51. **I. INTRODUCTORY PSYCHOLOGY.** (Formerly 55. I. and II.) — For juniors and seniors. This is an introductory course for those anticipating further study in psychology, physiology, sociology, etc., as well as a practical and cultural course for those who can take only one course in this field. It deals with the fundamental principles of psychology and their application to the understanding and control of human thought and action.

3 class hours.

Credit, 3.

Professor DeSILVA.

52. **II. EXPERIMENTAL PSYCHOLOGY.** (Formerly 65. III.) — For juniors; seniors may elect. The course is designed to acquaint students with typical problems and techniques of research in psychology. Each student will be allowed to spend a certain amount of time on an independent problem in addition to demonstrations, assigned readings, and class experiments.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Professor DeSILVA.

54. **II. EDUCATIONAL PSYCHOLOGY.** (Formerly 56. II. and III.) — For juniors; seniors may elect. An application of psychology to the field of education. The course deals with the original nature of the child, the psychology of learning, individual differences, transfer of training, mental tests, etc.

3 class hours.

Credit, 3.

Professor GLICK.

Prerequisite, Psychology 51 or the consent of the instructor.

85. **I. ABNORMAL PSYCHOLOGY.** — For seniors; juniors may elect. A study of abnormal behavior patterns and diseased personalities with a view to a better understanding and control of oneself.

3 class hours.

Credit, 3.

Professor DeSILVA.

Prerequisite, Psychology 51 or the consent of the instructor.

86. **II. APPLIED PSYCHOLOGY.** (Formerly 85. I.) — For seniors; juniors may elect. The applications of psychology to mental hygiene, medicine, law, business, politics, and other professions and industrial fields.

3 class hours.

Credit, 3.

Professor DeSILVA.

Prerequisite, Psychology 51 or the consent of the instructor.

89. **I. TESTS AND MEASUREMENTS.** (Formerly 79. III.) — For seniors; juniors may elect. A study of the history, nature, construction, and administration of the various types of mental tests. An attempt is made to criticize and evaluate the various usages of tests. Some attention is paid to statistical interpretations of data.

3 class hours.

Credit, 3.

Professor GLICK.

Prerequisite, Psychology 51 or 54 or consent of the instructor.

90. **II. CONTEMPORARY PSYCHOLOGIES.** — A survey of the history of psychology with special emphasis upon the analysis and evaluation of current psychological theories and schools.

2 class hours.

Credit, 2.

Professor DeSILVA.

PHILOSOPHY.

Elective Courses.

61. **I. HISTORY OF PHILOSOPHY.** (Formerly 52. I.) — For juniors; seniors may elect. A study of the development of western thought in general from the time of the early Greeks to the recent past. This course attempts to provide

Part II.

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a background for the evaluation and understanding of present theories in education, religion, ethics, metaphysics, etc.

3 class hours.

Credit, 3.

Professor GLICK.

62. II. TYPES OF CONTEMPORARY PHILOSOPHY. (Formerly 95. III.) — For juniors; seniors may elect. A study of current types of philosophy including naturalism, idealism, scepticism, mysticism, and pragmatism. An attempt is made to evaluate and criticize the various types of philosophy in the light of modern knowledge and historical perspective.

3 class hours.

Credit, 3.

Professor GLICK.

Economics, History, and Sociology.

Professor MACKIMMIE, Assistant Professor CUTLER, Assistant Professor JEFFERSON, Mr. WILLIAMS.

The courses in economics, history, and sociology are planned with the purpose of giving the student that knowledge and understanding of the important factors and problems in this field of study and life which every active citizen and educated man ought to have. In addition they enable a student to specialize in history and sociology and related science, or in social work.

ECONOMICS.

Required Course.

25. I. ECONOMIC PRINCIPLES. — For sophomores. Definitions of economic terms, such as wealth, capital, value, etc.; factors of production, exchange, and consumption; principles of economic production, supply and demand, diminishing returns, division of labor, productive organization; principles of exchange, theories of value, money and its problems; international trade, tariff and free trade theories; forms of income, wages, interest, rent, profits, and the forces which govern them; principles of spending, economy, luxury; principles and agencies for saving, investments, banks, building associations, insurance. Text-book and readings.

3 class hours.

Credit, 3.

Professor MACKIMMIE.

Elective Courses.

51. I. BUSINESS AND INDUSTRY. — For juniors and seniors. The forms, organization, administration, and labor problems of business. Methods of organizing, financing, and administering corporations and partnerships; forms of business administration, wholesaling, jobbing, retailing, advertising, credits and collections; system of industrial remuneration for wage earners, cooperation and preserving industrial peace; problems concerned with protective legislation for workmen and employers, sweated industries, prison labor, child labor, and industrial education.

3 class hours.

Credit, 3.

Professor MACKIMMIE.

52. II. PUBLIC FINANCE. — For juniors and seniors. Principles of public revenues and expenditures with special emphasis on the systems and problems of taxation.

3 class hours.

Credit, 3.

Professor MACKIMMIE.

HISTORY.

Required Course.

30. II. AMERICAN HISTORY. — For sophomores. The rise and development of the United States, with special stress upon the origin of present conditions. Lectures and readings.

3 class hours.

Credit, 3.

Assistant Professor CUTLER.

Elective Courses.

25. **I. AMERICAN GOVERNMENT.**—For sophomores; others admitted by permission of instructor. A study of the structure and operation of the machinery of our government; also a study of the history of its development from its inception to the present day.
3 class hours.

Credit, 3.

Assistant Professor CUTLER.

28. **II. ECONOMIC HISTORY OF THE UNITED STATES.**—For sophomores; juniors and seniors may elect. A study of the factors and forces which have affected the economic development of the United States. Special attention is focused on the working out of economic principles, and on the interaction between the economic, social, and political conditions and institutions. Text, lectures, and prepared discussions.
3 class hours.

Credit, 3.

Assistant Professor JEFFERSON.

32. **II. ENGLISH HISTORY.** (Formerly 29. II.)—For sophomores; juniors and seniors may elect. A study of the political, social, and religious movements in England, with special reference to an understanding of English literature.
3 class hours.

Credit, 3.

Professor MACKIMMIE.

51. **I. GOVERNMENT.** (Formerly 50. I.)—For juniors and seniors. Forms and working methods of the governments of Great Britain, Germany, France, Russia, Switzerland, New Zealand, and Canada; historic types and theories of government; forms and methods of Federal, State, and local governments in America; progress and problems of democracy, and new reform movements in organization and administration; new tendencies towards social legislation and extension of governmental control.
3 class hours.

Credit, 3.

Professor MACKIMMIE.

52. **II. MODERN EUROPEAN HISTORY (1933-34).** (Formerly 51. II.)—Alternates with Course 54. For juniors and seniors. The political and social history of the principal countries of Europe from 1500 to 1830.
3 class hours.

Credit, 3.

Professor MACKIMMIE.

53. **I. THE LITERATURE OF THE BIBLE.** (Formerly 54. I.)—For juniors and seniors. An introduction to the literature and teachings of the Old and New Testaments.
2 class hours.

Credit, 2.

Mr. WILLIAMS.

54. **II. EUROPEAN HISTORY SINCE 1830 (1934-35).** (Formerly 52. III.)—Alternates with Course 52. For juniors and seniors. The rise of nationalism and imperialism; the unification of Italy and of Germany; the Third French Republic; European expansion; the Russo-Japanese War; the World War. While this course is a continuation of Course 52, it is complete in itself and may be elected by those who have had no history training. Its aim is to provide a basis for an understanding of present-day conditions.
3 class hours.

Credit, 3.

Professor MACKIMMIE.

56. **II. THE PROBLEMS OF RELIGION.**—For juniors; seniors may elect. Admission by permission of instructor. The field of this course is that of the philosophy of religion. However, no attempt will be made to cover all the problems of this discipline. Only those problems will be considered which the students electing the course desire to have considered. Any current religious problem will be considered within the scope of the course. The method pursued will be that of the seminar.
2 class hours.

Credit, 2.

Mr. WILLIAMS.

58. II. THE HISTORY OF RELIGIONS. (Formerly 55. II.) — For juniors and seniors. Primitive religions: Hinduism, Buddhism, Mohammedanism, and Christianity. Consideration will be given to the application of the material of the course to current religious problems.
2 class hours.

Credit, 2.
Mr. WILLIAMS.

SOCIOLOGY.

Elective Courses.

27. I. ELEMENTS OF SOCIOLOGY. — For sophomores; others admitted by permission of instructor. A study of the individual considered as a member of his various groups; the group fallacy; the conditioned reflex; emotion; personality; social behavior; social stimulation; the group and the crowd; social attitudes, ideals, and adjustments; influence of environment; rural life; field and viewpoint of scientific sociology. Lectures and readings.
3 class hours.

Credit, 3.
Assistant Professor CUTLER.

51. I. 52. II. SOCIOLOGICAL LAWS AND THEIR APPLICATION. — For juniors; seniors may elect. A study of the scientific principles which characterize the relation of the individual to his various groups — the family, the school, the club, recreational institutions, the church, business, the government, and others. Practical application. This study is partly directed toward rural phases of the subject. Lectures, readings, field work, discussions, and topical reports. These courses are sequential, but may be elected independently.
3 class hours.

Credit, 3.
Assistant Professor CUTLER.
Prerequisite, Sociology 27, or the consent of the instructor.

54. II. HISTORICAL SOCIOLOGY. — For juniors; seniors may elect. Characteristics of primitive man, departure from the animal status and beginnings of civilization; origin and development of industries, arts, and sciences, including agriculture, of languages, warfare, migrations, and social institutions; a study of the powerful natural and human forces that have brought man from the early stages to modern development; characteristic features of the leading civilizations and races of ancient and modern times; beneficial and dangerous factors in American life.
5 class hours.

Credit, 5.
Assistant Professor CUTLER.
Prerequisite, Sociology 27, or the consent of the instructor.

75. I. PROBLEMS OF SOCIAL REFORM. — For seniors; juniors by permission. Such current problems as eugenics, race suicide, divorce, crime and delinquent classes, prison reform, prevention and treatment of dependents and defectives, poverty, its causes and preventions; constructive modern social reform movements for insurance of wage earners, farm relief, protection of childhood, assurance of safety, health, and play time for all classes. The correctional and charitable institutions of Massachusetts are studied in considerable detail.
5 class hours.

Credit, 5.
Assistant Professor CUTLER.
Prerequisite, Sociology 27, or the consent of the instructor.

77. I. FIELD WORK IN SOCIOLOGY. (Formerly 76. I.) — For seniors; juniors may elect. Designed to meet the needs of students who wish to do some constructive work in social service while still in college. Any project for which credit in this course is to be asked must first have the approval of the head of the department.

2 to 6 laboratory hours, credit, 1 to 3.
Assistant Professor CUTLER.

Prerequisite, Sociology 27, or the consent of the instructor.

78. **II. SOCIOLOGICAL RESEARCH.** (Formerly 77. **III.**) — For seniors; juniors may elect. Research methods — measurements, exploration, criticism, surveys; a careful study of the scientific method as applied to social problems; the technique of investigation and research; the procedure of gathering sociological data by means of the survey; the interpretation and graphic presentation of social facts. Text, lectures, field and laboratory work.
3 class hours.

Credit, 3.

Assistant Professor CUTLER.

Prerequisite, Sociology 27, or the consent of the instructor.

79. **I. 80. II. SEMINAR.** — Enrolment is open to graduate students, and seniors majoring in social science who are especially prepared. Topics recently studied are: modern economic theory; civilization as reflected in great literature; sociology of American colonies in the Caribbean region; success in community leadership; sociology of the Old World and Far East; the standard of living in American life; proposed improvements in local government; international social problems; the art of straight thinking; Utopias. Courses are sequential but may be elected independently.
2 class hours.

Credit, 2.

Professors MACKIMMIE and CUTLER.

84. **II. CONSERVATION OF THE FAMILY (1933-34).** (Formerly 83. **II.**) — For seniors; juniors may elect. A study of some of the modern problems in family life which can be traced to ancient lineage; ways in which an individual and society can help to conserve the family; some hindrances to normal family life; the contribution of the successful family toward community and world progress. Given in alternate years.
3 class hours.

Credit, 3.

Professor SKINNER.

Languages and Literatures.

Professor PATTERSON, Professor JULIAN, Associate Professor PRINCE, Associate Professor RAND, Assistant Professor GODING, Assistant Professor FRAKER, Mr. BARNARD, Mr. ELLERT, Mr. TROY, Miss BEAMAN.

The courses in English are intended to enable students to express themselves effectively and to appreciate the ideals of English-speaking people throughout their history.

The aim of the courses in French, Spanish, and German is to give the student a practical knowledge of these languages for the purpose of wider reading and research, to introduce him to some of their treasures in art and science, and through the literature to acquaint him with the people.

The courses in History and Interpretation of Music are non-technical in treatment and are intended for those who wish a background of the history of music and its interpretation.

ENGLISH.

Required Courses.

1. **I. 2. II. ENGLISH.** — For freshmen. Composition. Intended to teach straight thinking, sound structure, clear and correct expression. Lectures, recitations, theme writing, and conferences.

3 class hours.

Credit, 3.

Associate Professors PRINCE and RAND, Mr. BARNARD, Mr. TROY,
and Miss BEAMAN.

25. **I. 26. II. ENGLISH.** — For sophomores. A general reading course in English literature.

2 class hours.

Credit, 2.

Professor PATTERSON.

29. **I. 30. II. ENGLISH.** — For sophomores. Public speaking.
1 class hour.

Credit, 1.

Associate Professors PRINCE and RAND, Mr. BARNARD, and Mr. TROY.

Elective Courses.

50. II. ENGLISH POETRY AND THE ROMANTIC MOVEMENT (1933-34). — Alternates with Course 56. For juniors and seniors. A study chiefly in the beginning of Romanticism in English Poetry as found in the work of Collins, Gray, Burns, and Blake, with considerable attention to the culmination of Romanticism in the poetry of Shelley.

3 class hours.

Credit, 3.

Associate Professor PRINCE.

52. II. ENGLISH WRITERS FROM MILTON TO POPE. — For juniors and seniors. Some of the writers studied are Milton, Dryden, and Pope.

3 class hours.

Credit, 3.

Professor PATTERSON.

53. I. ENGLISH PROSE OF THE EIGHTEENTH CENTURY (1933-34). — Alternates with Course 61. For juniors and seniors. A brief exposition of the thinking of the period, in philosophy, government, and criticism is followed by a study of essayists and letter writers from Defoe to Godwin.

3 class hours.

Credit, 3.

Associate Professor PRINCE.

54. II. ENGLISH PROSE IN THE NINETEENTH CENTURY. — For juniors and seniors. Coleridge, Lamb, DeQuincey, Hazlitt, Macaulay, Carlyle, Ruskin, Newman, Arnold, Pater, Stevenson.

3 class hours.

Credit, 3.

Mr. BARNARD.

56. II. AMERICAN LITERATURE (1934-35). (Formerly 55. II and 56. III.) — Alternates with Course 50. For juniors and seniors. A course in the chief American writers, among those studied being Franklin, Brockden Brown, Irving, Cooper, Melville, Hawthorne, Emerson, Thoreau, Parkman, Freneau, Bryant, Poe, Longfellow, Whittier, Lowell, Whitman, Lanier.

3 class hours.

Credit, 3.

Associate Professor PRINCE.

58. II. ENGLISH POETRY OF THE NINETEENTH CENTURY. (Formerly 51. II. and 57. III.) — For juniors and seniors. Especial attention is given to Tennyson, Browning, and Swinburne.

3 class hours.

Credit, 3.

Professor PATTERSON.

59. I. BYRON AND KEATS (1933-34). (Formerly 60. I.) — Alternates with Course 75. For juniors and seniors.

3 class hours.

Credit, 3.

Professor PATTERSON.

61. I. CHAUCER (1934-35). — Alternates with Course 53. For juniors and seniors. Reading of the principal works of Chaucer; a study of Chaucer's development as a creative artist; an attempt to appreciate his humanism.

3 class hours.

Credit, 3.

Associate Professor PRINCE.

62. II. SHAKESPEARE. (Formerly 63. III.) — For juniors and seniors. Three or four representative plays will be studied as closely as possible.

3 class hours.

Credit, 3.

Professor PATTERSON.

64. II. THE LAKE POETS (1934-35). — Alternates with Course 68. For juniors and seniors. A study of the background, the theories and the poetry of the Lake Poets, the leaders of whom were Wordsworth and Coleridge.

3 class hours.

Credit, 3.

Associate Professor RAND.

65. **I. CREATIVE WRITING (1934-35).**—Alternates with Course 67. For juniors and seniors. Advanced work in writing, based upon specimens by contemporary authors and upon the personal experience of the student. Particular attention is given to certain elements of style.
3 class hours.

Credit, 3.
Associate Professor RAND.

67. **I. LIBRARY RESEARCH (1933-34).** (Formerly 66. II.) — Alternates with Course 65. For juniors and seniors. Each student makes a considerable investigation of a subject of his own selection. An orderly accumulation of material is followed by an intelligent and readable interpretation of its significance.
3 class hours.

Credit, 3.
Associate Professor RAND.

68. **II. THE TUDOR POETS (1933-34).**—Alternates with Course 64. For juniors and seniors. A study of the non-dramatic poetry of the Tudor period, culminating in the work of Spenser, the Elizabethan lyrists, and the King James translators of the Bible.
3 class hours.

Credit, 3.
Associate Professor RAND.

71. **I. ELIZABETHAN DRAMATISTS.**—For juniors and seniors. A study of the types of Elizabethan drama, exclusive of Shakespeare, with special consideration of the plays of such men as Lyly, Peele, Greene, Kyd, Marlowe, Jonson, Beaumont, Fletcher, Webster, Massinger.
3 class hours.

Credit, 3.
Associate Professor PRINCE.

75. **I. THE NOVEL (1934-35).**—Alternates with Course 59. For juniors and seniors. A rapid survey of the beginnings of the novel will be followed by a somewhat careful study of its types and development as revealed in such works as Tom Jones, Vicar of Wakefield, Pride and Prejudice, Ivanhoe, David Copperfield, Vanity Fair, Adam Bede, Kidnapped, Tess of the D'Urbervilles, Esther Waters, Rise of Silas Lapham, House of Mirth, Main Street.
3 class hours.

Credit, 3.
Professor PATTERSON.

79. **I. SHAKESPEARE.**—For juniors and seniors. This course is based upon the careful reading of about twenty of Shakespeare's plays, selected to indicate the evolution of the dramatist and to emphasize the various phases of his art.
3 class hours.

Credit, 3.
Associate Professor RAND.

80. **II. MODERN DRAMA (1934-35).**—Alternates with Course 82. For juniors and seniors. This course will trace the development of English drama from the time of Ibsen to the present day. The purpose of the course is to impart an intelligent and sympathetic interest in the theatre of the twentieth century.
3 class hours.

Credit, 3.
Associate Professor RAND.

82. **II. MODERN POETRY (1933-34).** (Formerly 81. III.) — Alternates with Course 80. For juniors and seniors. This course attempts to trace the spirit of Twentieth Century poetry from such authors as Hardy, Whitman, and Emily Dickinson to those of the present day. About fifteen Twentieth Century poets are studied in this course, particular attention being given to the influence of Whitman and Emily Dickinson. The student is required to memorize a number of lyrics.
3 class hours.

Credit, 3.
Associate Professor RAND.

PUBLIC SPEAKING.

Elective Courses.

50. **II. ARGUMENTATION AND ORATORY.** (Formerly 50. I. and 51. III.) — For juniors and seniors. Presents the fundamental principles of argumentation with the principles and the practice of formal oratory; the preparation and delivery of one original oration; prescribed reading in oratory. The course is recommended for those who desire to enter the Intercollegiate debates and the Flint Contest.

3 class hours.

Credit, 3.

Associate Professor PRINCE.

FRENCH.

Elective Courses.

1. **I. 2. II. ELEMENTARY FRENCH.** — For freshmen; sophomores, juniors, and seniors may elect. The essentials of grammar are rapidly taught and will be accompanied by as much reading as possible.

3 class hours.

Credit, 3.

Assistant Professor GODING.

5. **I. 6. II. INTERMEDIATE FRENCH.** — For freshmen and sophomores; juniors and seniors may elect. Training for rapid reading. The reading of a number of short stories, novels, and plays; readings from periodicals and scientific texts in the library.

3 class hours.

Credit, 3.

Assistant Professor FRAKER.

Prerequisites, French 1 and 2.

27. **I. 28. II. ADVANCED FRENCH.** — For sophomores; juniors and seniors may elect. A general survey of the history of French literature and the development of French culture, with representative works of the important periods. Lectures. Outside readings.

3 class hours.

Credit, 3.

Assistant Professor GODING.

Prerequisites, French 5 and 6.

51. **I. FRENCH LITERATURE.** (Formerly 50. I.) — For juniors and seniors. A detailed study of the Romantic period. Readings from Hugo, de Vigny, Lamartine, de Musset, and others. Influence of English, German, and Italian literature is stressed. Lectures and outside readings.

3 class hours.

Credit, 3.

Assistant Professor GODING.

Prerequisites, French 5 and 6.

52. **II. FRENCH LITERATURE.** (Formerly 51. II.) — For juniors and seniors. A detailed study of the Realistic period and the modern writers. Readings from Balzac, Flaubert, Stendahl, Loti, Daudet, Anatole France, and others. Lectures and outside reading.

3 class hours.

Credit, 3.

Assistant Professor GODING.

Prerequisites, French 5 and 6.

75. **I. 76. II. FRENCH LITERATURE.** — For seniors; juniors may elect. Survey of the Classical period, with readings from representative works.

3 class hours.

Credit, 3.

Assistant Professor FRAKER.

Prerequisites, French 5 and 6.

80. **II. METHODS OF TEACHING FRENCH** (1933-34). (Formerly 81. III.) — For seniors; juniors may elect with the consent of the instructor. This course is designed to meet the needs of students intending to teach French and those desiring a more accurate knowledge of the French language. The elements

of pronunciation will be studied scientifically and from the standpoint of the teacher. There will be a rapid but thorough review of grammar which will be followed by a discussion on textbooks and reading materials. Given in alternate years.

1 class hour.

Credit, 1.
Assistant Professor GODING.

SPANISH.

Elective Courses.

51. I. 52. II. ELEMENTARY SPANISH.—For juniors and seniors; open to other students upon arrangement. Grammar, exercises in composition and conversation, reading of selected short stories.

3 class hours.

Credit, 3.
Assistant Professor FRAKER.

75. I. 76. II. MODERN SPANISH AUTHORS.—For seniors. Reading from modern Spanish novel and drama; composition; outside reading.

3 class hours.

Credit, 3.
Assistant Professor FRAKER.

Prerequisite, Spanish 52.

GERMAN.

Elective Courses.

1. I. 2. II. ELEMENTARY GERMAN.—For freshmen; sophomores, juniors, and seniors may elect. Grammar, reading, and prose composition. Special emphasis is placed on the acquirement of a fundamental stem vocabulary and the ability to understand simple German paragraphs in German.

3 class hours.

Credit, 3.
Professor JULIAN and Mr. ELLERT.

5. I. 6. II. INTERMEDIATE GERMAN.—For freshmen; sophomores, juniors, and seniors may elect. Reading and study of some important literary productions in the field of the novel and the drama.

3 class hours.

Credit, 3.
Mr. ELLERT.

Prerequisites, German 1 and 2, or Entrance German.

25. I. 26. II. INTERMEDIATE GERMAN.—For sophomores; juniors and seniors may elect. The German short story; grammar review and advanced prose composition.

3 class hours.

Credit, 3.
Mr. ELLERT.

Prerequisites, German 1 and 2.

27. I. 28. II. ADVANCED GERMAN.—For sophomores; juniors and seniors may elect. Goethe's *Faust*.

3 class hours.

Credit, 3.
Professor JULIAN.

Prerequisites, German 5 and 6, or 25 and 26.

51. I. 52. II. SCIENTIFIC GERMAN.—For juniors and seniors. Intensive and specialized reading of literature in standard German scientific journals and reference books.

3 class hours.

Credit, 3.
Professor JULIAN.

Prerequisites, German 5 and 6, or 25 and 26.

75. I. 76. II. GERMAN LITERATURE.—For seniors. Advanced study of German literature and history; collateral readings, including masterpieces of different epochs, such as the *Niebelungenlied*, *Parzival*, and some typical modern drama.

3 class hours.

Credit, 3.
Professor JULIAN.

Prerequisites, German 27 and 28.

79. I. 80. II. CONVERSATIONAL GERMAN.—Open to advanced students in German, by permission of the instructor in charge. Practice in the oral use of German, based on reading material prepared in advance, and dealing with present-day Germany.
2 class hours.

Credit, 2.

Professor JULIAN and Mr. _____

MUSIC.

Elective Courses.

51. I. HISTORY AND INTERPRETATION OF MUSIC. (Formerly 50. I.) — For juniors and seniors. The Classical School. Works of Bach, Handel, Haydn, and Mozart are performed and studied. Lectures, musical illustrations, and outside readings.

3 scheduled hours.

Credit, 2.

Assistant Professor GODING.

52. II. HISTORY AND INTERPRETATION OF MUSIC. (Formerly 51. II.) — For juniors and seniors. A continuation of Course 51. The Romantic School: Beethoven, Schubert, Weber, Mendelssohn, Schumann, Chopin, Berlioz, Liszt. The Italian, French, and German schools of opera; modern and contemporary composers.

3 scheduled hours.

Credit, 2.

Assistant Professor GODING.

75. I. 76. II. ENSEMBLE MUSIC.—For juniors and seniors. This course will include lectures on history of development of the orchestra and orchestral music, choral music, and band, theory and practice in harmony, arrangement and transposition of various numbers for the use of orchestra, chorus, and band. It is designed to give fundamental instruction that should be of direct value to the student for enjoyment and performance of musical compositions. All students registering for the course are expected to belong to the orchestra, chorus, or band. Course 75 is prerequisite to Course 76.

3 scheduled hours.

Credit, 2.

Assistant Professors GODING and CUBBON.

GENERAL DEPARTMENTS.

Military Science and Tactics.

Colonel CHARLES A. ROMEYN, Cav. (D. O. L.), U. S. A.; Captain DWIGHT HUGHES, Jr., Cav. (D. O. L.), U. S. A.; Captain HERBERT E. WATKINS, Cav. (D. O. L.), U. S. A.; Technical Sergeant JONATHAN MADDEN, U. S. A., Retired; Technical Sergeant JAMES A. WARREN, Cav. (D. E. M. L.), U. S. A.; Sergeant FRANK CRONK, Cav. (D. E. M. L.), U. S. A.; and a detachment of enlisted men of the United States Army.

Under act of Congress, July 2, 1862, the College was required to provide a two-year course in military instruction under a regular army officer. All able-bodied four-year male students are required to take this course. Under act of Congress, June 3, 1916, as amended by act of Congress, September 8, 1916, there was established at this college in April, 1917, an infantry unit of the Reserve Officers' Training Corps. Following the World War and an act of Congress, July 19, 1918, the Reserve Officers' Training Corps has been in operation under the regulation of the War Department, administered by the president of the college and the professor of military science and tactics. Beginning with the fall term, 1920-21, the infantry unit of the Reserve Officers' Training Corps was converted into a cavalry unit.

The primary object of the Reserve Officers' Training Corps is to provide systematic military training at civil educational institutions, for the ultimate purpose of qualifying selected students of such institutions as reserve officers in the military forces of the United States. It is intended to attain this object during the time the students are pursuing their general or professional studies, with the least practicable interference with their civil careers, by employing methods designed to fit men physically, mentally, and morally for pursuits of peace as well as war.

The course for cavalry units of the Reserve Officers' Training Corps includes

theoretical and practical instruction in all phases of cavalry work, so distributed over the four-year college course as to qualify students at the end of the freshman year as privates of cavalry, at the end of the sophomore year as non-commissioned officers of cavalry, and upon graduation as reserve officers. The instruction in this department covers cavalry drill, cavalry weapons — rifle, pistol, saber, machine rifle, and machine gun — map reading and military sketching, minor tactics, equitation, etc. The course in equitation includes cross-country riding and jumping. Forty per cent of the course is classroom work. All practical instruction is out of doors.

All male candidates for a degree in the four-year course must take at least three hours a week of military training for two years. Students who are approved by the president and the professor of military science and tactics may take the advanced course in their junior and senior years if they so elect. The advanced course consists of at least five hours per week and a summer camp of about six weeks during the summer vacation between the junior and senior years. Students taking this course are paid by the Federal Government at a rate to be fixed by the Secretary of War, not to exceed the value of the army ration. The rate now fixed is thirty cents per day, which, with all allowances, amounts to about two hundred and thirty-five dollars. Students graduating in the advanced course are eligible for commissions in the Officers' Reserve Corps, but are not required to accept such commissions if offered.

The uniform furnished to the freshmen and sophomores (basic course) is a very presentable one of olive drab woolen cloth, and is supplied by the Federal Government without cost except for the necessary alterations. The uniforms for the juniors and seniors (advanced course) are similar to U. S. army officers' uniforms, tailor-made for the individual student. A deposit of thirty dollars for this uniform is required at the beginning of the junior year. The student is reimbursed through the allowances for clothing and rations.

Required Courses.

1. I. 2. II. For freshmen. Theoretical and practical instruction in courtesy and discipline, rifle marksmanship, hygiene and first aid, dismounted drill and musketry.

3 scheduled hours, credit, 2
ARMY INSTRUCTORS.

25. I. 26. II. For sophomores. Theoretical and practical instruction in leadership, riding, drill, saber, machine rifle and pistol, and employment of cavalry.

3 scheduled hours, credit, 2
ARMY INSTRUCTORS.

Elective Courses.

51. I. 52. II. For juniors. Cavalry drill and riding, selection and care of horses, pistol marksmanship, machine guns, map reading, map making, jumping, and employment of cavalry.

5 scheduled hours, credit, 3
ARMY INSTRUCTORS.

75. I. 76. II. For seniors. Military law, history, correspondence and records, engineering (bridges and explosives), cavalry drill, leadership and command, riding, mounted sports, competitions, horse-show preparation and management, cross-country riding, and employment of cavalry.

5 scheduled hours, credit, 3
ARMY INSTRUCTORS.

Physical Education and Hygiene.

Professor HICKS, Professor GORE, Professor RADCLIFFE, Mrs. HICKS, Assistant Professor DERBY, Assistant Professor TAUBE, Mr. BALL, Mr. BRIGGS, Mr. ROGERS.

The purpose of the laboratory courses offered by this department is to provide active exercise regularly, in order that all students may properly care for their health and maintain their physical condition throughout their college course. It

is also hoped that the health and exercise habits thus established will be continued after leaving college. The course in Hygiene is a series of lectures designed to give to the new student the simple rules of living both as an individual and in his relations with others. The required courses for men and for women are supplemented by special lectures on social hygiene and social relations. The elective courses for men are offered for those students who are preparing to teach. The majority of our graduates who enter the teaching profession in either the public or private schools are expected to do some physical education or athletic work either as coaches or administrators.

MEN.

Required Courses.

1. I. HYGIENE.—For freshmen. Lectures on personal hygiene, including the physiological basis for sound health habits, the importance of the systematic planning of a student's daily program in order to provide the proper amounts of time for study, with suitable periods of sleep, relaxation, recreation, and sports; posture, appropriate types of exercise, proper nutrition, social adjustment, the necessity for frequent medical, optical, and dental advice; sanitation and group health requirements.

1 class hour.

Credit, 1.

Professor RADCLIFFE.

3. I. PHYSICAL EDUCATION ACTIVITY. RECREATION. (Formerly 2. I.)—For freshmen. Outdoor games in the regular classwork include soccer, forward pass drive, kick football, swimming, and miscellaneous games using their respective skills; a physical achievement test consisting of track and field events is given. Men may elect freshman football or freshman cross country. Men taking classwork are divided into teams and receive the benefit of cooperative effort as well as the advantages of healthful, big-muscle activities.

2 2-hour laboratory periods, 1st half of semester, credit, 1.

The DEPARTMENT.

4. II. PHYSICAL EDUCATION ACTIVITY. RECREATION. (Formerly 3. III.)—For freshmen. Outdoor games in the regular classwork include soft ball, cricket, simplified volley ball, swimming, tennis, and miscellaneous games using their respective skills, such as long base, end ball, home run ball, volley ball newcomb, and dodge volley ball. Men may elect freshman baseball or freshman track. The course aims to encourage health habits and to give a fund of exercise material for use in after-school days.

2 2-hour laboratory periods, 2d half of semester, credit, 1.

The DEPARTMENT.

23. I. PHYSICAL EDUCATION ACTIVITY. RECREATION. (Formerly 25. I.)—For sophomores. Continuation of Course 3 with more difficult skills and coordinations. Advanced soccer and touch football and swimming, and miscellaneous games using their respective skills are included; a physical achievement test consisting of track and field events is given. Men may elect tennis, golf, varsity football, varsity cross country or varsity soccer. The course aims to develop skills that will make participation pleasurable and establish exercise habits for later life.

2 2-hour laboratory periods, 1st half of semester, credit, 1.

The DEPARTMENT.

24. II. PHYSICAL EDUCATION ACTIVITY. RECREATION. (Formerly 26. III.)—For sophomores. Continuation of Course 4, with progression. Archery, badminton, golf, soft ball, swimming, and advanced volley ball and miscellaneous games utilizing their respective skills are included. The men are introduced to these games with carry-over value during the first half of the course and may then specialize in one of them for the remainder of the course. Leadership, followship, and self-expression through participation are emphasized. Men may elect tennis, golf, varsity baseball or varsity track.

2 2-hour laboratory periods, 2d half of semester, credit, 1.

The DEPARTMENT.

[All undergraduate students are given a physical examination upon entering.]

Elective Courses.

Admission by permission only.

51. **I. PHYSICAL EDUCATION THEORY AND PRACTICE. OUTLINE AND NORMAL COURSE FOR TEACHER-COACHES.** (Formerly 71. I.) — For juniors and seniors. This course outlines the coaching of football, soccer, and basketball. There are several lectures on competitive psychology. Lectures, collateral readings, theory situations, and notebook. Directed teaching, practice teaching, observation, officiating, and supervision of football, soccer, basketball, and physical education classes.
2 class hours. 1 2-hour laboratory period, by arrangement, credit, 3.
The DEPARTMENT.

52. **II. PHYSICAL EDUCATION THEORY AND PRACTICE. OUTLINE AND NORMAL COURSE FOR TEACHER-COACHES.** (Formerly 81. II. and 91. III.) — For juniors and seniors. Continuation of Course 51. This course outlines the coaching of baseball, track and field athletics, and hockey and winter sports, also lectures on athletic pedagogy. Lectures, collateral readings, theory situations, and notebook. Directed teaching, practice teaching, observation, officiating, and supervision of baseball, track and field athletics, hockey, winter sports, miscellaneous games, intramural athletics, and physical education classes.
2 class hours. 1 2-hour laboratory period, by arrangement, credit, 3.
The DEPARTMENT.

53. **I. PHYSICAL EDUCATION THEORY AND PRACTICE. SCHOOL PROGRAMS OF PHYSICAL EDUCATION.** (Formerly 74. I.) — For juniors and seniors. This course includes lectures covering the objectives, organization, significance, and content of school programs in grade and high school. The course is correlated with the requirements of the State Department of Education. Rhythmics, folk dancing, games, marching, story plays, self-testing activities, apparatus work, posture training, achievement tests, miscellaneous games, and intramural contests are considered.
1 class hour. 1 2-hour laboratory period, by arrangement, credit, 2.
The DEPARTMENT.

54. **II. PHYSICAL EDUCATION THEORY AND PRACTICE. SCHOOL PROGRAMS OF HEALTH EDUCATION. FIRST AID AND TRAINING.** (Formerly 85. II. and 95. III.) — For juniors and seniors. This course gives the teaching supervision, and administration of secondary school health programs. Progression of content, methods of presentation, and motivation will be considered. Duties of health counselors and the coordination of all health factors for the child are stressed. Trends in health education, use of materials, health tests and measurements as well as the teaching of health habits, and safety education set-ups are considered. This course also consists of first aid as applied in the home, on the street, and on the athletic field. Prevention of athletic injuries, determination of fatigue, and conditioning are considered. Practice is given in bandaging and taping. Men who complete this course satisfactorily will be given American Red Cross First Aid Certificates. Lectures, demonstrations, and notebook.
1 class hour. 1 2-hour laboratory period, by arrangement, credit, 2.
The DEPARTMENT.

55. **I. PHYSICAL EDUCATION THEORY. HISTORY AND PURPOSES OF PHYSICAL EDUCATION.** (Formerly 84. II.) — For juniors and seniors. A brief study of the history of the development of the various systems of physical education and the men who promoted them and a study of the aims and ideals of present-day physical educators. Lectures, textbooks, reports on assigned readings, and a final outline.
1 class hour. Credit, 1.
The DEPARTMENT.

56. **II. PHYSICAL EDUCATION THEORY AND PRACTICE. TRAINING COURSE FOR CAMP COUNSELORS.** (Formerly 96. III.) — For juniors and seniors. A study of the organized camp as a part of education and the qualifications necessary

to become camp counselors. Development, objectives, and educational aims of the organized camp, and types and equipment of camps are considered. A job analysis of the camp counselor is made. Special skills and the theory and practice of camping in the open are considered.

1 class hour.

1 2-hour laboratory period, by arrangement, credit, 2.
The DEPARTMENT.

WOMEN.

Required Courses.

1. **I. HYGIENE.** — For freshmen. Lectures on personal hygiene, including the physiological basis for sound health habits, the importance of the systematic planning of a student's daily program in order to provide the proper amounts of time for study, with suitable periods of sleep, relaxation, recreation, and sports; posture, appropriate types of exercise, proper nutrition, social adjustment, the necessity for frequent medical, optical, and dental advice; sanitation and group health requirements.

1 class hour.

Credit, 1.

Professor RADCLIFFE.

7. **I. RECREATION.** (Formerly 4. I. and 5. II.) — For freshmen. Outdoor season: archery, games, soccer, special gymnastics, tennis, track; indoor season: badminton, basketball, clog, folk, and tap dancing (rhythmic dances), special gymnastics, swimming, volley ball, games.

2 2-hour laboratory periods, credit, 2.

Mrs. HICKS.

8. **II. RECREATION.** (Formerly 5. II. and 6. III.) — For freshmen. Indoor season: badminton, basketball, clog, folk, and tap dancing, special gymnastics, indoor baseball, swimming, volley ball, games; outdoor season: archery, baseball, special gymnastics, tennis, track.

2 2-hour laboratory periods, credit, 2.

Mrs. HICKS.

27. **I. RECREATION.** — For sophomores. Outdoor season: archery, soccer, special gymnastics, tennis, track; indoor season: badminton, basketball, dancing, special gymnastics, swimming.

2 2-hour laboratory periods, credit, 2.

Mrs. HICKS.

28. **II. RECREATION.** — For sophomores. Indoor season: badminton, basketball, dancing, special gymnastics, indoor baseball, swimming; outdoor season: archery, baseball, special gymnastics, tennis, track.

2 2-hour laboratory periods, credit, 2.

Mrs. HICKS.

Elective Courses.

61. **I.** 62. **II. RECREATION.** (Formerly 50. II.) — For juniors. Outdoor season: sports and games depending upon the physical condition and needs of the students; indoor season: natural dancing.

2 1-hour laboratory periods, credit, 1.

Mrs. HICKS.

81. **I.** 82. **II. RECREATION.** (Formerly 76. II.) — For seniors. Outdoor season: sports and games for physical benefits and further development of skill and for social contacts; indoor season: natural dancing.

2 1-hour laboratory periods, credit, 1.

Mrs. HICKS.

The Graduate School.

F. J. SIEVERS, *Director.*

Graduate courses leading to advanced degrees have been available at the College practically since its establishment. At the beginning these courses leading to the degrees of master of science and doctor of philosophy were confined almost entirely to the offerings in the field of science. Since then the work has expanded until now a major toward either degree may be selected in any of the following subjects:—

Agricultural Economics
Agronomy
Bacteriology
Botany
Chemistry

Entomology
Horticulture
Physiology
Pomology
Sociology

The following departments offer major work toward a master of science degree only:

Animal Husbandry
Dairy Industry
Education

Floriculture
Horticultural Manufactures
Poultry Science

The degree of master of landscape architecture is granted to students completing the two years' graduate work offered by the department of landscape architecture; while students taking the equivalent of one year's graduate work in that major may be granted the degree of bachelor of landscape architecture.

Several other departments in the institution, while not regularly organized for major work in the graduate school, do, nevertheless, offer courses which may be selected for minor credit. These are:

English
French
Forestry
Geology
German

Landscape Architecture
Mathematics
Physics
Veterinary Science
Zoölogy

The general requirements of the graduate school regarding entrance, residence, credits, tuition, fees, etc., together with specific information concerning details of interest to prospective students are set down in a separate bulletin which may be obtained upon request to the Director's Office.

The Summer School.

The summer session offers courses of college grade only. Both undergraduate and graduate courses are given, intended for school superintendents, normal school, high school, college, and university teachers, college undergraduates, and any other serious student who is suitably prepared. When satisfactorily completed, these courses carry college credit.

ADMISSION.

There are no formal examinations for admission to the summer school. Undergraduate students are admitted to such courses as their preparation justifies. Admission to the graduate school will be granted to graduates of the Massachusetts State College and to the graduates of other institutions having substantially equivalent requirements for the bachelor's degree.

The following list of courses usually offered indicates the character and extent of the work, but is subject to modification.

General Bacteriology	Sociological Philosophy of Education
Business Law	The Employed Teacher of Agriculture
Elements of Economics	Vocational Education
Principles and Methods of Teaching	Secondary Education
History of Education	American Literature
Introduction to Psychology	Ibsen and the Contemporary Drama
Educational Psychology	The Novel
Advanced Psychology	Poetry of the Nineteenth Century
History of Greek and Medieval Philosophy	Dramatic Presentation
Intelligence Tests and Educational Tests	Garden Flowers and Bedding Plants
Ethics	Flower Arrangement
Vocational Guidance	English History
Philosophy of Education	History of the United States
	Recent Economic History
	Public Health
	Introduction to Sociology

FEES.

The tuition fee is ten dollars together with a recreation fee of three dollars, and laboratory fees in certain courses.

For further information, write or apply to Roland H. Verbeck, Director of Short Courses, Massachusetts State College, Amherst, Mass.

For information concerning graduate work in the summer school, write or apply to Fred J. Sievers, Director of the Graduate School, Massachusetts State College, Amherst, Mass.

SPECIAL NOTICE.

Due to financial stringency there will be no summer session in 1933.

Non-Degree Courses of Instruction.

THE STOCKBRIDGE SCHOOL OF AGRICULTURE.

General Information.

The Stockbridge School of Agriculture was organized in 1918, under the name of "The Two-Year Course in Practical Agriculture," for the purpose of meeting the demand for a short course in agriculture which might be taken by students who could not satisfy college entrance requirements or who, for one reason or another, were unable to take the college course. The name was changed to the present one by vote of the trustees of the college in 1928.

This course trains men and women for the practice of farming or associated agricultural industries. Graduation from it does not fulfill the requirements for entrance into the degree course nor are credits earned during the course transferable toward credit for a degree.

As the course is now organized, students may specialize in any one of several vocations: animal husbandry, dairy manufactures, floriculture, horticulture, fruit growing, poultry husbandry or vegetable gardening. Specialization in a vocation does not prevent students from securing a general working knowledge of other subjects. The Stockbridge School will appeal not only to young men and women, but also to men and women of mature years and practical experience who wish to know more about the business of farming or associated agricultural industries. The School is not intended for students enrolled in a high school; such students should complete their high-school course before seeking admission to this school.

Entrance Requirements.

Applicants for admission must be at least seventeen years of age and must have completed at least an elementary school course or its equivalent. Before being enrolled for the work of the second year, students must have completed six months' practical experience approved by the supervisor of placement training.

Students who are already enrolled in high schools and who wish to enter this school before the completion of the high-school course should bring a statement either from the principal of the high school or from the parent or guardian, requesting enrolment.

Instruction.

The instruction is given by the regular faculty by means of classroom teaching, laboratory exercises, and practical work. The work of the classroom is supplemented by demonstration work in the laboratory, dairy room, greenhouse and stables, and by a six months' period of farm placement training during the spring and summer following the second term of resident instruction. The course is designed to offer plain, practical, direct information, and to establish the underlying reasons for, as well as methods employed in, the various operations.

Credit and Diploma.

In order to obtain a diploma, the student must complete satisfactorily all the work required in the vocational course which he has selected. This course consists of five terms of class and laboratory instruction, supplemented by six months of practical experience gained between the second and third terms of residence instruction and subject to the approval of the supervisor of placement training. No student failing to meet the requirements of his six months' summer training can be enrolled for the three terms of the second year, since he is not entitled to the diploma of the School.

Graduates of county schools of agriculture or of agricultural departments of high schools may complete the course for a diploma in one year if they are recommended by the director of the county school or by the instructor in charge of the department of agriculture in the high school.

Special Catalog.

For a complete catalog of the Stockbridge School of Agriculture, containing an application blank, write or apply to Director Roland H. Verbeck, Massachusetts State College, Amherst, Mass.

THE WINTER SCHOOL.

Short Courses are based on the idea that the motive which inspires study is the most significant factor in study itself, and that this motive rises when the student himself realizes he faces a problem that calls for a solution. Therefore, there is no age limit. Enrolled in short courses are found the young and the old, the experienced and the inexperienced, the theoretical and the practical. In this grouping there is a value, since students learn from each other as well as from the instructors. Practically all Short Course students intend to make a direct application of the knowledge gained. Hence the aim of Short Course work is to offer the largest amount of information and training in agricultural and horticultural lines in the shortest possible time. During the past twenty years Short Courses have served hundreds of students in this Commonwealth, and the demand for these courses in recent years has steadily continued.

The Winter School has been established for a number of years at the college, and has proved to be very popular with farmers, their wives, sons, and daughters, teachers, college graduates, and others. This school begins about the first of January. Instruction is offered as follows:

Ten Weeks' Practical and Scientific Course for Florists. (Given on alternate years, — next year, 1934.)

Ten Weeks' Course in General Farming. (Including dairy farming and fruit growing.)

Ten Weeks' Course in Greenkeeping.

Ten Weeks' Course in Poultry Raising.

A series of special one-week courses in ice cream making, butter making, milk testing, and market milk are offered. During the one week the student devotes all of his time to the work of the special course in which he has enrolled. The instruction lasts throughout the day from 8 to 5. These courses meet a very definite need in the State for those who wish instruction, but who cannot attend for a longer period of time, and who do not wish to take other subjects.

Fees.

For all students taking the full ten-weeks term of the Winter School there is a tuition fee of \$10 and, in addition, a registration fee of \$5. There are no laboratory fees in connection with any of the courses.

For further information, write or apply to Roland H. Verbeck, Director of Short Courses, Massachusetts State College, Amherst, Mass.

DEGREES CONFERRED—1932.

DOCTOR OF PHILOSOPHY (PH.D.)

Morgan, Ezra Leonidas, M.A., University of Wisconsin Columbia, Mo.

MASTER OF SCIENCE (M.S.)

Bower, James, Jr., B.S., Massachusetts State College	Holyoke.
Chap, James John, A.B., Bates College	West Springfield.
Cleveland, Maurice Mortimer, B.S., Massachusetts State College	East Pepperell.
Digney, Anna Katherine, B.S., Massachusetts State College	Boston.
Dyer, Cora Gennette, B.S., Massachusetts State College	Northampton.
Frey, Newell William, B.S., Massachusetts State College	South Hadley Falls.
Griffiths, Francis Priday, B.S., University of Washington	Gloucester.
Haddock, Jay LaMar, B.S., Brigham Young University	Bloomington, Ida.
Holway, Alfred Harold, B.S., Massachusetts State College	Holyoke.
Horsley, Ernest Mathias, B.S., Utah State Agricultural College	Brigham City, Utah.
Isham, Paul Dwight, B.S., Massachusetts State College	Hampden.
Jones, Fred William, B.S., Massachusetts State College	Otis.
Lowry, Wayne Judson, B.S., Michigan State College	Midland, Mich.
McDonnell, Charles Patrick, A.B., Catholic University	West Springfield.
Nickerson, Ralph Francis, B.S., Massachusetts State College	Attleboro.
Nicolaides, Costas, B.S., Rutgers University	Waterbury, Conn.
Parrott, Ernest Milford, B.S., Union University	Cordova, Tenn.
Pray, Francis Civille, B.S., Massachusetts State College	Amherst.
Rice, Cecil Curtis, B.S., Massachusetts State College	Worcester.
Sanctuary, William Crocker, B.S., Massachusetts State College	Amherst.
Stiles, Alice Goodrich, B.S., Massachusetts State College	Westfield.
Strickland, John Valentine, A.B., Rust College	Byhalia, Miss.
Sullivan, John Ayer, B.S., Massachusetts State College	Medford.
Thatcher, Christine Belle, B.S., Massachusetts State College	Cummington.
Van Veghten, Grant Bernard, B.S., Cornell University	Rochester, N. Y.
Weeks, Mildred Ada, A.B., Radcliffe College	South Gardner.
White, Harold James, B.S., Massachusetts State College	Brighton.
Williams, Inez Wilhelmina, B.S., Massachusetts State College	Brookton.

MASTER OF LANDSCAPE ARCHITECTURE (M.L.A.)

Brewster, Sam Finley, B.S., Texas A. and M. College Auburn, Ala.

BACHELOR OF LANDSCAPE ARCHITECTURE (B.L.A.)

Brown, Kenneth Theodore, B.S., University of Maine	Mexico, Me.
Lawrence, John Cheney, B.S., Massachusetts State College	Brimfield.
Saraceni, Raphael, B.S., Massachusetts State College	Lynn.

BACHELOR OF SCIENCE (B.S.)

Anderson, Carrolle Elizabeth	Ashfield.
Astore, John Joseph	Stockbridge.
Baker, Walter Connor	Franklin.
Batstone, William Frank	West Newton
Berggren, Stina Matilda	Worcester.
Bishop, Herbert Lorimer	Worcester.
Black, Mary Egesta	Williamsburg.
Boland, Katherine	Dracut.
Bunten, John Frederick	Brockton
Burns, Theodore Chandler	Taunton.
Burrington, John Cecil, Jr.,	Charlemont.
Caird, Wynne Eleanor	Dalton.
Carter, Forrest Edward	Wakefield.
Chapman, Kenneth William	Springfield.
Chase, Herbert Manton, Jr.	Newport, R. I.
Cheney, Howard Alton	Springfield.
Church, Gertrude Barber	North Amherst.
Clark, Mildred Cahoon	Springfield.
Clark, Newell Lloyd	Springfield.
Clark, Webster Kimball, Jr.	West Deerfield.
Cohen, William Bernard	Springfield.
Cone, John Paine	Amherst.
Connell, Philip Joseph	Springfield.
Davis, William Proud	Waltham.
DeGelleke, Peter	Boonton, N. J.
Delisle, Albert Lorenzo	South Hadley Falls.
Dickinson, Thelma Louise	Belchertown
Diggs, Robert Lewis	Brighton.
Donaghy, Edward Joseph	New Bedford.
Doyle, James Edward	Northampton.
Edmond, Stuart Deane	Amherst.
Eldredge, Josephine	Chatham.
Evans, Richard Warren	North Attleboro.
Fiore, Celeste	Montclair, N. J.
Fisher, William Sidney, Jr.	Mt. Ephriam, N. J.
Fletcher, Robert Bliss	Worcester.
Flood, George Millard	North Adams.
Foley, John Joseph	Amherst.
Folger, Richard Sloane	Roslindale.
Fontaine, Arthur Lewis	Allston.
Forest, Herbert Leon	Arlington.
Gagliarducci, Vincent Nicholas	Springfield.

oodall, Leslie Duncan	Winthrop.
oodwin, Azor Orne	Marblehead.
ordon, Laura Elizabeth	Ipswich.
reene, William Capewell	Middlebury, Conn.
unness, Robert Charles	Amherst.
ale, Kenneth Fowler	Tolland.
anslick, Otis Henry	Somerville.
aynes, Arnold Calvin	Springfield.
ickney, Zôe Edwina	Andover.
itchcock, John David	West Medway.
odge, Kenneth Elba	Monson.
older, Eben Daniel	Hudson.
olmberg, Oscar Edward	Waltham.
ols, Henry	North Andover.
owe, Elizabeth Vose	South Acton.
owlett, Carey Harris	Southampton.
unter, Marion Brockway	Holyoke.
ohnson, Catharine Genevieve	Amherst.
ohnson, William Anders	Haverhill.
orczak, Joseph Stanley	Chicopee.
ane, Eugene Joseph	Westfield.
aylor, John Daniel	Fall River.
eyes, Curtis Gilbert	Whitinsville.
illeen, John Bernard, Jr.	Cambridge.
ake, Susan Glidden	Avon.
awrence, Edwina Frances	Springfield.
apie, Joseph	Dorchester.
evine, Harry O. H.	Springfield.
ibbey, William Clinton	Westboro.
oomer, Edward Alfred	Abington.
orrey, Robert Henry	Watertown.
acLean, John Douglas	West Bridgewater.
tamaqi, Nusret Osman	Albania.
targolin, Oscar	Newtonville.
tarkus, Christine Veronica	Monson.
tason, Donald Mowatt	South Easton.
McChesney, Herbert Lewis	West Springfield.
territt, Orris Elma	Sheffield.
territt, Richard Hyde	Williamsburg.
itchell, Ernest Wilson, Jr.	Newburyport.
orrison, Florence Lee	Williamstown.
elson, Harmon Oscar, Jr.	Whitinsville.
ourse, Arthur Lesure	Westboro.
'Donnell, Patrick Edward	North Abington.
hlwiler, Margaret Amelia	Southbridge.
arsons, Anna Thankful	Southampton.
neo, Victor Clifton	Mt. Tom.
ollard, Robert Lonsdale	Amherst.
ollin, Lillian Pauline	Springfield.
otter, Rial Strickland, Jr.	Springfield.
owers, John Joseph	South Sudbury.
'nce, Carlton Gordon	Adams.
eed, Elizabeth Ruth	Dalton.
ice, Clara Ruth	Charlemont.
offey, Robert Cameron	Rockport.
oss, Paul Howard	Waltham.
lenius, Charles Henry	Hingham.
lisbury, Alston Moore	Melrose Highlands.
lter, Leonard Austin, Jr.	Springfield.
nith, Aleck	Everett.
nith, George Gilman	Lebanon, N. H.
ringer, Frank Leslie	Arlington.
uart, Wallace Wyman	Littleton Common.
vester, George Stull	Glen Rock, N. J.
ylor, Avis Ruth	Dedham.
ylor, Marie Clarisse	Lee.
tro, Robert Carl	Williamsburg
rompson, Elmer Joseph	Brookline.
kofski, John William	Walpole.
ppo, Oswald	Jamaica Plain.
owle, Gifford Hoag	Holden.
ue, Henry Harriman	Haverhill.
viss, Mildred Florence	Hudson.
n Leer, Hans Lodewyk	Hilversum, Holland.
orneveld, William, Jr.	Nantucket.
anegar, Melvin Harold	Montague City.
arner, Lulu Harriet	Amherst.
arren, Philip Wallis	West Auburn.
askiewicz, Edward Julian	Three Rivers.
atson, Edward Winslow	Plymouth.
ear, William Homer	Waltham.
ebb, Pauline Alice	Goshen.
elch, Frederick Joseph	Rockland.
endell, Charles Butler, Jr.	Lexington.
etterlow, Eric Hilding, Jr.	Manchester.
heeler, Kenneth Monroe	Great Barrington.
herity, Richard White	Scituate.
hitten, Gilbert Yould	Melrose.
lison, James Louis	Ashland.

BACHELOR OF VOCATIONAL AGRICULTURE (B.V.A.)

byan, Warren White	South Weymouth.
skett, Clifford Robert	East Weymouth.

HONORARY DEGREES

DOCTOR OF AGRICULTURE (D.Agr.)

Brooks, William Penn Amherst.

DOCTOR OF LAWS (LL.D.)

Wilder, John Emory Chicago, Ill.
Willard, Daniel Baltimore, Md.

REGISTRATION, 1932-33.

GRADUATE STUDENTS.

Superior figures indicate: ¹ Enrolled during academic year, 1931-32.

³ Enrolled during first term, 1932-33.

Abbott, Julia E.^{1,3} Chemistry Frederick, Md.
A.B., Hood College.
Anderson, Carrolle E.³ Botany Ashfield.
B.S., Massachusetts State College.
Ayer, Welcome.³ Education Chatham.
A.B., Smith College.
Baker, Mary G.¹ Education Amherst.
B.S., Purdue University.
Barton, Dorothy L.¹ Education Wakesbury, Conn.
A.B., Mt. Holyoke College.
Beaman, Evelyn A.^{1,3} English Leverett.
B.S., Massachusetts State College.
Beebe, James M.³ Bacteriology Newtonville.
B.S., Allegheny College.
Bennett, Emmett.^{1,3} Chemistry Blanchester, Ohio.
B.S., Ohio State University.
Bicknell, Marguerite E.¹ Sociology Amherst.
B.A., Smith College.
Bosworth, William E., Jr.^{1,3} Education Holyoke.
B.S., Massachusetts State College.
Bower, James, Jr.¹ Education Holyoke.
B.S., Massachusetts State College.
Bowler, James E.¹ Chemistry Springfield.
B.S., St. Lawrence University.
Brackley, Floyd E.¹ Education Strong, Me.
B.S., Massachusetts State College.
Bratton, Allen W.³ Landscape Architecture Williamstown.
B.S., University of Maine.
Brewster, Sam F.¹ Landscape Architecture Auburn, Ala.
B.S., Texas Agricultural and Mechanical College.
Briggs, Lawrence E.^{1,3} Rockland.
B.S., Massachusetts State College.
Brockschmidt, John H.³ Dairy Industry Cincinnati, Ohio.
B.S., Ohio State University.
Broudy, Herman.³ Entomology New York City, N. Y.
B.S., Pennsylvania State University.
Brown, Alfred A.^{1,3} Agricultural Economics Lawrence.
B.S., Massachusetts State College.
Brown, J. Lee.^{1,3} Landscape Architecture Fort Collins, Colo.
B.S., Colorado Agricultural College.
Brown, Kenneth T.¹ Landscape Architecture Mexico, Me.
B.S., University of Maine.
Brown, Paul W.¹ Education Fiskdale.
B.S., Massachusetts State College.
Bullis, Kenneth L.¹ De Kalb, Ill.
D.V.M., Iowa State College.
Burke, Edward J.¹ Education Hatfield.
B.S., Massachusetts State College.
Burnham, Catharine A.¹ Botany Shelburne.
B.S., Massachusetts State College.
Butler, Carlos N., Jr.³ Mathematics and Physics Springfield.
E.E., Rensselaer Polytechnic Institute.
Calvi, John.^{1,3} Chemistry Athol.
B.S., Massachusetts State College.
Cartwright, Carlton O.³ Education Northampton.
B.V.A., Massachusetts State College.
Chap, James J.^{1,3} Chemistry West Springfield.
A.B., Bates College.
M.S., Massachusetts State College.
Chapin, Ellis W., Jr.^{1,3} Education Chicopee Falls.
B.S., Massachusetts State College.
Chapman, Kenneth W.³ Bacteriology and Physiology Springfield.
B.S., Massachusetts State College.
Chase, W. Thayer.^{1,3} Landscape Architecture Newport, R. I.
B.S., Rhode Island State College.
Childs, Harriet E.¹ Education Deerfield.
A.B., Smith College.
Clague, John A.^{1,3} Bacteriology Tacoma, Wash.
B.S., University of Washington.
M.S., Massachusetts State College.

Clark, Hermon R. ¹	Education	Springfield.
B.S., University of Maine.		
M.S., Massachusetts State College.		
Clarke, Miriam K. ^{1,3}	Bacteriology	Abington.
B.A., Mt. Holyoke College.		
Clary, Willard B. ³	Chemistry	North Amherst.
M.E., Rensselaer Polytechnic Institute.		
Cleveland, Maurice M. ^{1,3}	Chemistry	East Pepperell.
B.S., Massachusetts State College.		
M.S., Massachusetts State College.		
Cogan, Michael A. ¹		Holyoke.
A.B., Dartmouth College.		
Cohen, Isadore O. ¹	Education	Holyoke.
B.A., Syracuse University.		
Cowing, William T. ³	Education	West Springfield.
B.S., Colby College.		
Currie, Eugene K. ^{1,3}	Education	Ashfield.
A.B., Colby College.		
Darling, Herbert D. ³	Education	Brighton.
B.S., Massachusetts State College.		
Darnell, Matthew C., Jr. ³	Agronomy	Frankfort, Ky.
B.S., University of Kentucky.		
Davis, Arnold M. ^{1,3}	Landscape Architecture	Berlin.
B.S., Massachusetts State College.		
Decker, Catherine L. ³	Education	South Deerfield.
B.A., College of New Rochelle.		
Dickinson, Lawrence S. ^{1,3}	Horticulture	Amherst.
B.S., Massachusetts State College.		
Jigney, Anna K. ¹	Education	Boston.
B.S., Massachusetts State College.		
Donley, Jessie E. ^{1,3}	Agricultural Economics	Plainfield, N. J.
A.B., Mt. Holyoke College.		
Doyle, James E. ³	Chemistry	Northampton.
B.S., Massachusetts State College.		
Dunlap, Glen LeR. ¹		Amherst.
D.V.M., Kansas State College.		
Dyer, Cora G. ¹	Chemistry	Northampton.
B.S., Massachusetts State College.		
Eames, Allen S. ³	Bacteriology	Wilmington.
B.S., Norwich University.		
Edmond, Stuart D. ³	Entomology	Amherst.
B.S., Massachusetts State College.		
Elliot, Lawrence W. ³	Education	Waltham.
B.S., Massachusetts State College.		
Elly, Philip L. ^{1,3}	Education	Florence.
B.A., Colby College.		
Enton, Daniel E. ¹	Education	Holyoke.
A.B., College of the Holy Cross.		
Field, George W. ¹	Education	Florence.
B.S., Massachusetts State College.		
Fitzgerald, Paul R. ^{1,3}	Botany	Revere.
B.S., Massachusetts State College.		
Fletcher, Robert B. ³	Sociology	Worcester.
B.S., Massachusetts State College.		
Foley, Mary J. ^{1,3}	Agricultural Economics	Amherst.
B.S., Massachusetts State College.		
M.S., Massachusetts State College.		
Foley, William J. ³	Education	Springfield.
A.B., College of the Holy Cross.		
Folger, Richard S. ³	Education	Rosindale.
B.S., Massachusetts State College.		
Fokett, Clifford R. ³	Dairy Industry	East Weymouth.
B.V.A., Massachusetts State College.		
France, Frances T. ¹		Amherst.
B.S., Massachusetts State College.		
Frey, Newell W. ¹	Education	South Hadley Falls.
B.S., Massachusetts State College.		
Gallant, James F. ³	Education	Worcester.
B.S., Connecticut Agricultural College.		
Gessler, George H. ¹	Entomology	Lawrence.
B.S., Connecticut Agricultural College.		
Germany, Claude B. ^{1,3}	Education	Athol.
A.B., Harvard College.		
Iguit, Constantine J. ^{1,3}	Botany	Athol.
B.S., Massachusetts State College.		
Innsburgh, Stanley A. ¹	Sociology	Holyoke.
A.M., Johns Hopkins University.		
Keason, E. Kendall. ³	Education	Shrewsbury.
B.S., Syracuse University.		
Kodell, Herbert A. ^{1,3}	Zoölogy	Southbridge.
B.S., Massachusetts State College.		
Kodell, Herman U. ^{1,3}	Zoölogy	Southbridge.
B.S., Massachusetts State College.		
Kodrich, Raymond E. ¹	Education	Amherst.
B.S., Massachusetts State College.		
Kordon, Jeanne A. ³	Sociology	Holyoke.
B.S., Massachusetts State College.		
Korman, Joseph W. ¹	Education	Upton.
B.S., Massachusetts State College.		
Kw, Hazel C. ³		Greenwich.
LL.B., Portia Law School.		

Gower, Albert H. ^{1,2}	Chemistry	Malden.
B.S., Massachusetts State College.		
Griffiths, Francis P. ¹	Horticultural Manufactures	Gloucester.
B.S., University of Washington.		
Gunness, Robert C. ¹	Chemistry	Amherst.
B.S., Massachusetts State College.		
Hadley, Allan M. ¹	Education.	Agawam.
B.A., Clark University.		
Haddock, Jay LaM. ^{1,2}	Agronomy	Bloomington, Ida.
B.S., Brigham Young University.		
M.S., Massachusetts State College.		
Haddock, Pearl R. ^{1,2}	Horticultural Manufactures	Bloomington, Ida.
B.S., Utah State Agricultural College.		
Hanslick, Otis H. ¹	Education	Providence, R. I.
B.S., Massachusetts State College.		
Hassett, James F. ¹	Education	Springfield.
Ph.B., College of the Holy Cross.		
Hastings, Emory B. ^{1,2}	Education	Athol.
B.S., Massachusetts State College.		
Hatch, Ruth F. ²	Education	North Amherst.
A.B., Middlebury College.		
Hebard, William E. ¹	Education	Chester.
B.A., University of Maine.		
Holway, Alfred H. ^{1,2}	Education	Holyoke.
B.S., Massachusetts State College.		
M.S., Massachusetts State College.		
Holway, Richard T. ²	Entomology	South Duxbury.
A.B., Dartmouth College.		
Horsley, Ernest M. ¹	Dairy Industry	Brigham City, Utah.
B.S., Utah State Agricultural College.		
Isham, Paul D. ^{1,2}	Chemistry	Hampden.
B.S., Massachusetts State College.		
M.S., Massachusetts State College.		
Jack, Melvin C. ¹	Education	Taunton.
B.S., Massachusetts State College.		
Jeffrey, Fred P. ²	Poultry Science	Tranger, Pa.
B.S., Pennsylvania State College.		
Jenness, Raymond N. ^{1,2}	Education	Hanover.
B.S. in Ed., Bridgewater State Teachers College.		
Johnson, Arthur C. ²	Landscape Architecture	Greenfield.
B.S., Massachusetts State College.		
Johnson, Catharine G. ²	Bacteriology	Amherst.
B.S., Massachusetts State College.		
Jones, Fred W. ¹	Chemistry	Otis.
B.S., Massachusetts State College.		
Jones, Lawrence A. ²	Agricultural Economics	Greenfield.
B.S., Massachusetts State College.		
Jones, Marshall E. ¹	Sociology	Northampton.
A.B., Washington University.		
B.D., Harvard Divinity—Episcopal Pherl. School.		
Jones, William L. ¹	Agronomy	Bryan, Texas.
B.S., Agricultural and Mechanical College of Texas.		
M.S., Agricultural and Mechanical College of Texas.		
Judd, Elizabeth ¹		Holyoke.
B.A., Wellesley College.		
Kane, Eugene J. ²	Chemistry	Westfield.
B.S., Massachusetts State College.		
Kellogg, Willard M. ¹	Landscape Architecture	West Hartford, Conn.
B.A., Amherst College.		
Kimball, Evelyn D. ^{1,2}	Bacteriology	Amherst.
B.S., Middlebury College.		
Knapp, Dorothee ¹		Halle (Saale), Germany.
University of Halle.		
Knightly, Agnes E. ^{1,2}	Education	Amherst.
A.B., Mt. Holyoke College.		
Labarge, Robert R. ¹	Education	Holyoke.
B.S., Massachusetts State College.		
La Montagne, Mable F. ¹	Education	Northampton.
A.B., Smith College.		
Langford, John A. ^{1,2}	Education	Springfield.
A.B., College of the Holy Cross.		
Lawrence, John C. ¹	Landscape Architecture	Brimfield.
B.S., Massachusetts State College.		
Lilly, Dorothy H. ¹	Education	Springfield.
A.B., Smith College.		
Lindquist, Harry G. ¹		Amherst.
B.S., Massachusetts State College.		
M.S., University of Maryland.		
Lovejoy, Richard P. ²	Chemistry	Saugus.
B.Ch.E., Northeastern University.		
Lowry, Wayne J. ¹	Horticulture	Midland, Mich.
B.S., Michigan State College.		
McDonnell, Charles P. ¹	Education	West Springfield.
A.B., Catholic University of America.		
McGukian, John W. ²	Education.	Rosindale.
B.S., Massachusetts State College.		
McIntire, Clara L. ^{1,2}	Education	Springfield.
B.C.S., Northeastern University.		
MacMasters, Majel M. ^{1,2}	Chemistry	Collinsville, Conn.
B.S., Massachusetts State College.		
M.S., Massachusetts State College.		

Part II.

McNamara, John M. ³	English	Webster.
A.B., Dartmouth College.		
Mahoney, Ella M. ³	Education	Westfield.
B.S. in Ed., Framingham State Teachers College.		
Mahoney, James H. ¹	Biology.	Holyoke.
A.B., College of the Holy Cross.		
Mason, Donald M. ³	Education	South Easton.
B.S., Massachusetts State College.		
Miller, Donald R. ³	Education	Northampton.
A.B., Bucknell University.		
Missett, James S. ³	Education.	Springfield.
A.B., College of the Holy Cross.		
Mitchell, Ernest W., Jr. ³	Education	Newburyport.
B.S., Massachusetts State College.		
Monosmith, Rudolph O. ¹³	Landscape Architecture	College Station, Texas.
B.S., Mississippi Agricultural and Mechanical College.		
Moore, William J., Jr. ¹³	Agronomy	Pittsburgh, Pa.
B.S., Pennsylvania State College.		
M.S., Pennsylvania State College.		
Morgan, Ezra L. ¹	Sociology	Columbia, Missouri.
A.B., McKendree College.		
M.A., University of Wisconsin.		
Mori, Kanosuke. ¹³	Landscape Architecture	Matsudo, Chibaken, Japan.
Chiba Horticultural College.		
Moriarty, Florence C. ¹	Education	Northampton.
A.B., Smith College.		
Moriarty, Helen E. ¹³	Education	Holyoke.
A.B., Smith College.		
Morrison, Florence L. ³	Education	Amherst.
B.S., Massachusetts State College.		
Morse, Miriam. ¹³	Entomology	New Braintree.
B.S., St. Lawrence University.		
Moseley, Louis H.		Agawam.
B.S., Massachusetts State College.		
Mueller, William S. ¹³		Tower Hill, Illinois.
B.S., University of Illinois.		
Mullins, James, M. ³		Holyoke.
A.B., Loyola University.		
Murphy, Charles E. ³	Education	Pittsfield.
Nazmi, Fahih. ³	Chemistry	Izmir, Turkey.
B.A., International College, Izmir, Turkey.		
Nelson, Harmon O., Jr. ¹	Education	Whitinsville.
B.S., Massachusetts State College.		
Nickerson, Ralph F. ¹³	Chemistry.	Attleboro.
B.S., Massachusetts State College.		
M.S., Massachusetts State College.		
Nicolaides, Costas. ¹	Poultry Science	Waterbury, Conn.
B.S.A., Rutgers University.		
Niason, Harry. ¹	Education	Lexington.
B.S., Massachusetts State College.		
Nitkiewicz, Boleslaw. ¹³	Botany	South Hadley.
B.S., Massachusetts State College.		
Norell, Frieda B. ¹	Education	Amherst.
B.S., Massachusetts State College.		
O'Conner, Michael G. ¹³	Horticultural Manufactures	Springfield.
B.S., St. Lawrence University.		
O'Malley, Michael J. ¹	Education	West Springfield.
B.S., University of New Hampshire.		
Orcutt, Leon M. ¹³	Education	Gouldsboro, Me.
B.A., University of Maine.		
Osinski, Walter J. ³	Education	Westfield.
B.S., University of Illinois.		
Packard, Ransom C. ¹³	Bacteriology	North Amherst.
B.S.A., University of Toronto.		
Papendieck, Hans ¹		Koenigsberg, Germany.
D.Sc., University of Koenigsberg.		
Parrott, Ernest M. ¹	Chemistry	North Amherst.
B.S., Union University.		
Phealan, Katharine M. ¹		Athol.
A.B., Smith College.		
Phinney, William R. ³	Education	Amherst.
B.S., Massachusetts State College.		
Piper, Francis K. ¹	Education	Orange.
B.A., Tufts College.		
Plantinga, Martin P. ¹³	Agricultural Economics	Amherst.
B.S., Massachusetts State College.		
Pray, Francis C. ¹	Education	Amherst.
B.S., Massachusetts State College.		
Prescott, Glenn C. ³	Education	Florence.
B.A., University of Maine.		
Quirk, John M. ¹	Education	North Agawam.
B.S., Middlebury College.		
Redmon, Bryan C. ¹³	Chemistry	Paris, Ky.
B.S., University of Kentucky.		
Reed, James P. ¹	Education	Hadley.
B.S., University of Vermont.		
Regan, John M. ¹	Education	Holyoke.
A.B., Brown University.		
Rice, Cecil C. ¹³	Horticultural Manufactures	Worcester.
B.S., Massachusetts State College.		
Rice, Roy C. ¹	Chemistry	Wilbraham.
B.S., University of New Mexico.		

Richmond, Katharine C. ³ Bacteriology	Northampton.
B.A., Cedar Crest College.	
Rogosa, Morrison. ³ Bacteriology	Lynn.
B.A., State University of Iowa.	
Ronka, Lauri S. ³ Sociology	Gloucester.
B.S., Massachusetts State College.	
Ross, Paul H. ³ Chemistry	Waltham.
B.S., Massachusetts State College.	
Sacco, Ernest T. ¹ Chemistry	East Boston.
B.S., Boston College.	
Sanctuary, William C. ¹ Poultry Science	Amherst.
B.S., Massachusetts State College.	
Saraceni, Raphael. ¹ Landscape Architecture	Lynn.
B.S., Massachusetts State College.	
Sawyer, Milton J., Jr. ¹ Education	Huntington.
B.S., in Ed., Boston University School of Education.	
Sears, Elizabeth K. ¹ Landscape Architecture	Amherst.
B.A., University of Kansas.	
Shumway, Paul E. ³ Education	Turners Falls.
B.S., Massachusetts State College.	
Simonds, Gardner W. ¹ Education	Arlington.
B.A., University of New Hampshire.	
Smith, Ernest G. ³ Horticultural Manufactures	Medford.
B.S., Massachusetts State College.	
Smith, Robert H. ¹ Chemistry	Hopedale.
B.S., Bowdoin College.	
Spaulding, Lucian B. ^{1,3} Chemistry	Madison, Ind.
A.B., DePauw University.	
Spaulding, Major F. ³ Agronomy	Greensboro, N. C.
B.S.A., North Carolina College.	
B.S., Cornell University.	
M.S., Cornell University.	
Spelman, Albert F. ^{1,3} Chemistry	New London, Conn.
B.S., Massachusetts State College.	
Spooner, Laurence W. ³ Chemistry	Brimfield.
B.S., Massachusetts State College.	
Stanisiewski, Leon. ^{1,3} Education	Hadley.
B.S., Massachusetts State College.	
Stanisiewski, Peter F. ^{1,3} Education	Amherst.
A.B., Syracuse University.	
Stiles, Alice G. ¹ Bacteriology and Physiology	Westfield.
B.S., Massachusetts State College.	
Strickland, John V. ¹ Poultry Science	Byhalia, Miss.
A.B., Rust College.	
Stuart, Wallace W. ³ Chemistry	Littleton Common.
B.S., Massachusetts State College.	
Sullivan, John A. ¹ Education	Medford.
B.S., Massachusetts State College.	
Tague, Ada W. ³	Amherst.
B.S., Iowa State College.	
Tarlow, Marc. ¹ Education	Amherst.
B.S., Tufts College.	
M.A., Harvard College.	
Thatcher, Christine B. ^{1,3} Bacteriology	Cummington.
B.S., Massachusetts State College.	
M.S., Massachusetts State College.	
Thigpen, James E. ¹ Agricultural Economics	Tarboro, N. C.
B.S., Connecticut Agricultural College.	
Tompkins, Earle A. ³ Chemistry	Easthampton.
A.B., Clark University.	
True, Henry H. ^{1,3} Botany	Haverhill.
B.S., Massachusetts State College.	
Van Veghten, Grant B. ¹ Botany	Rochester, N. Y.
B.S., Cornell University.	
Vichules, Marguerite M. ^{1,3} Botany	Northampton.
B.S., Massachusetts State College.	
Vopelius, Oswald. ¹ Agricultural Economics	Bad Ball bei Goeppingen,
M.S., University of Illinois.	Germany.
Vose, Charles E. ¹ Education	Ashfield.
B.S., Middlebury College.	
Wanegar, Melvin H. ³ Chemistry	Montague City.
B.S., Massachusetts State College.	
Weeks, Mildred A. ^{1,3} Education	South Gardner.
A.B., Radcliffe College.	
M.S., Massachusetts State College.	
Wendell, Charles B., Jr. ³ Chemistry	Lexington.
B.S., Massachusetts State College.	
White, Harold J. ¹ Bacteriology and Physiology	Brighton.
B.S., Massachusetts State College.	
Wildner, Edwin J. L. ³ Chemistry	Amherst.
B.S., Massachusetts Institute of Technology.	
Williams, F. Earle. ^{1,3} Education	Agawam.
B.S., Massachusetts State College.	
Williams, Inez W. ^{1,3} Entomology	Brockton.
B.S., Massachusetts State College.	
M.S., Massachusetts State College.	
Woodward, Harold O. ³ Education	Segreganset.
B.S., Connecticut Agricultural College.	
Wright, Caroline. ³ Agricultural Economics	Chelmsford.
A.B., Radcliffe College.	
Yoerg, Gretchen L. ³ Education	Holyoke.
A.B., Smith College.	

SUMMARY GRADUATE STUDENTS.

	Men.	Women.	Total.
Enrolled during academic year 1931-32	99	32	131
Enrolled during first term 1932-33	98	29	127
Total excluding duplications	162	46	208

UNDERGRADUATE STUDENTS.
CLASS OF 1933.

Abstrom, Clifton Nils	Quincy	94 Pleasant Street.
Aldrich, George Elliot	Northampton	3 Cosby Avenue
Anderson, Mabelle Lydia	Southwick	15 Fearing Street.
Armstrong, Irene Elizabeth	East Sandwich	Abigail Adams House.
Asquith, Dean	Lowell	Theta Chi.
Barr, Arthur Butler	Lowell	10 Nutting Avenue.
Barter, John Chaffer	Shrewsbury	Davenport Inn.
Bearse, Arthur Everett	Sharon	Lambda Chi Alpha.
Bedord, Wilfred Hugh	Worcester	Lambda Chi Alpha.
Beeler, Nelson Frederick	Adams	Phi Sigma Kappa.
Beeman, Evelyn Elizabeth	Ware	Abigail Adams House.
Bell, Burton Brainard	Addison, Conn.	Theta Chi.
Benjamin, Doris Beulah	Ashfield	19 Phillips Street.
Best, Dorothy Gertrude	Holyoke	Abigail Adams House.
Betts, Benjamin Davenport	Norwalk, Conn.	Sigma Phi Epsilon.
Bickford, Ralph Henry	Cheshire	Phi Sigma Kappa.
Boston, Margaret Mary	Auburndale	The Homestead.
Brown, Arthur Endicott	Wayland	Phi Sigma Kappa.
Bulman, James Cornelius	Greenfield	Alpha Sigma Phi.
Cain, George Herbert	Braintree	Alpha Gamma Rho.
Caragianis, Costas Louis	Dracut	Sigma Phi Epsilon.
Cary, Marjorie Elizabeth	Lyonsville	Abigail Adams House.
Chenoweth, Howard Whitten	North Amherst	Phi Sigma Kappa.
Clancy, Carl Francis	Dedham	Phi Sigma Kappa.
Clark, Charles Edward	Bedford	Q. T. V.
Crawford, Forrest Emerson	Belmont	97 Pleasant Street.
Crosby, David	Wakefield	R. D. F. 3, Box 81.
Crowell, John Brewer	Boonton, N. J.	15 Phillips Street.
Cummings, Benton Pierce	Ware	13 South College.
Dechter, Joseph Maxwell	Chelsea	East Experiment Station.
Dods, Agnes Miriam	Leverett	Montague.
Doerpholz, Eunice Minerva	Holyoke	30 Glen Street, Holyoke.
Dyar, George Wellington	Waltham	Theta Chi.
Eldridge, Richard Albert	South Chatham	Alpha Sigma Phi.
Entwistle, Charles Clifford	Mendon	Colonial Inn.
Fawcett, Edward Gilbert	Amherst	Kappa Sigma.
Fowler, John Malcolm	West Newton	Kappa Sigma.
Gallup, Edward Louis	Norfolk	Theta Chi.
Garity, Agnes Elinor	Boston	Draper Hall.
Gerrard, Margaret Lawrence	Holyoke	13 Fearing Street.
Gilmore, Samuel Rand	Wrentham	Lambda Chi Alpha.
Ginsburgh, Irene Rebecca	Holyoke	1859 Northampton Street, Holyoke.
Gleason, Cloyes Tilden	Hanover	Kappa Sigma.
Goodell, Bertrand Cheney	Southbridge	Kappa Epsilon.
Griffin, Katherine	Holyoke	Abigail Adams House.
Guralnick, Eugene Abraham	Roxbury	Delta Phi Alpha.
Gurney, Ashley Buell	Cummington	10 Nutting Avenue.
Hager, William Perry	South Deerfield	94 Pleasant Street.
Hammond, Richard Clayton	Quincy	Lambda Chi Alpha.
Hanson, Robert	Waltham	Lambda Chi Alpha.
Hodsdon, George Edward, Jr.	Gloucester	Phi Sigma Kappa.
Hosford, Robert Stanley	Springfield	Lambda Chi Alpha.
Houran, Gordon Andrew	Ashburnham	Lambda Chi Alpha.
Hovey, Alan Edwin	Ludlow	Kappa Sigma.
Howes, Robert Milton	Swift River	17 Phillips Street.
Hubbard, Catherine Newton	Sunderland	Abigail Adams House.
Isgur, Benjamin	Dorchester	East Experiment Station.
Jahnle, Carl George	Bedford	Sigma Phi Epsilon.
Johnson, Eunice Moore	Holden	Abigail Adams House.
Kane, Esther Marie	Holyoke	49 Glen Street, Holyoke.
Karlson, Eric Richard	Worcester	Lambda Chi Alpha.
Karlson, Josta Andrew ¹	Worcester	Lambda Chi Alpha.
Klaucke, Elfriede	Worcester	Abigail Adams House.
Kovaleski, John Alexander	Westfield	Q. T. V.
Kulash, Walter Michael	Haydenville	Alpha Gamma Rho.
Leary, Daniel Joseph	Turners Falls	Sigma Phi Epsilon.
Leverault, Philip Joseph	Williamansett	Apiary, M. S. C.
MacLinn, Walter Arnold	Amesbury	Theta Chi.
Marchelewicz, Joseph Ludwig	Three Rivers	17 Phillips Street.
McMahon, Agnes Grimes	Brighton	19 Phillips Street.
McMahon, Margaret Cornelia	Brighton	19 Phillips Street.
Miller, Charlotte Winifred	South Amherst	South Amherst.
Minarik, Charles Edwin	Westfield	Q. T. V.
Miner, Harold Edson, Jr.	Holyoke	65 Columbus Ave., Holyoke.

¹ Candidate for Degree of Bachelor of Vocational Agriculture.

Miner, Kenneth Carlyle	Groton, Conn.	45 Fearing Street.
Moody, Charles William	Pittsfield	31 Fearing Street.
Munson, Janice	Amherst	101 Butterfield Terrace.
Murphy, Sarah	Dorchester	Birch Lawn.
Nash, Edmond	Greenfield	Kappa Epsilon.
Nelson, Harold Richmond	Framingham	Kappa Sigma.
Oliver, Thomas Joseph	Gloucester	c/o De Rose, Farview Way.
O'Mara, Joseph George	South Boston	Box 36, North Amherst.
Ordway, Alfreda Lucie	Hudson	Abigail Adams House.
Parker, Arthur Clough	Lynn	Theta Chi.
Pelissier, Raymond Francis	Hadley	Russell Street, Hadley.
Perkins, Isabel Roberta	Worcester	Abigail Adams House.
Pike, Anita Leigh	Dorchester	Abigail Adams House.
Polar, John	Acushnet	97 Pleasant Street.
Politella, Joseph	Lawrence	Davenport Inn.
Poole, Horace Lincoln	Lynn	Phi Sigma Kappa.
Powell, Townsend Henry	Brookfield	Theta Chi.
Priest, Arthur George	Windsor, Conn.	Care of H. E. Whiting,
		Amherst.
Pruyne, Granville Sherman	Pittsfield	Kappa Sigma.
Riihimaki, Arthur Alexander	Quincy	French Hall.
Rowley, Richard Andrew	Holyoke	351 Chestnut St., Holyoke.
Rudman, Helen Howland	Agawam	Abigail Adams House.
Runge, Paul Martin	Norton	Lambda Chi Alpha.
Runvik, Kenneth Carl	Worcester	Kappa Epsilon.
Russell, Waldo Rufus	Townsend	Lambda Chi Alpha.
Scott, Seymour Blois	Sharon	Kappa Sigma.
Semanie, William Michael	Springfield	254 Liberty Street, Spring-
		field.
Sheff, Joseph John	Turners Falls	Sigma Phi Epsilon.
Shepard, Sidney	Malden	Delta Phi Alpha.
Sisson, Parker Lincoln	Lynn	13 Phillips Street.
Smith, Robert Lee	Roslindale	56 Pleasant Street.
Smith, William Tyler	North Brookfield	Alpha Gamma Rho.
Sorton, Edgar	South Hadley Falls	Mathematics Building.
Soule, Harold Leroy	West Bridgewater	Theta Chi.
Southwick, Lawrence	Leicester	Theta Chi.
Steffanides, George Fote	Boston	Kappa Epsilon.
Stephan, Charles Philip	Brooklyn, N. Y.	Kappa Sigma.
Sturtevant, Ralph Francis	Halifax	Kappa Epsilon.
Swartzwelder, John Clyde	East Lynn	Theta Chi.
Taft, Robert	Mendon	Phi Sigma Kappa.
Taylor, Fred Herbert	Groton	Theta Chi.
Taylor, Marion Ruth	Greenfield	Abigail Adams House.
Thompson, Edwin James ¹	Boston	Alpha Gamma Rho.
Townsend, Eleanor	Worcester	61 Lincoln Avenue.
Tyler, Stanley Warren	East Lynn	Alpha Sigma Phi.
Utey, Walter Sampson	Chesterfield	97 Pleasant Street.
Vogel, Ruth Marion	Holyoke	70 Lincoln Avenue.
Waite, Harold Montefiore	Northampton	Lambda Chi Alpha.
Ward, Willard Raymond	Brookline	Hatch Experiment Station.
Whitcomb, Richard Frank	Springfield, Vt.	Theta Chi.
White, Maurice Francis	Maynard	Lambda Chi Alpha.
Wilson, Sylvia Belle	Ware	Abigail Adams House.

CLASS OF 1934.

Adams, Laura Elizabeth	Athol	Draper Hall.
Ainsworth, Gordon Ellery	South Deerfield	R. F. D. 3, Box 81.
Alton, Herbert Roger	Webster	Theta Chi.
Barrett, Wilmer Dwight	West Bridgewater	Stockbridge Hall.
Bates, Roger Gordon	Cummington	Kappa Epsilon.
Batstone, Frank Arthur, Jr.	West Newton	Theta Chi.
Bennett, Stephen Wiggins ¹	Worcester	9 Phillips Street.
Bernstein, Harry	Everett	Delta Phi Alpha.
Bick, David Louis	Everett	Delta Phi Alpha.
Bigelow, George Harrison	Marlborough	Sigma Phi Epsilon.
Bingham, Leonard Joseph	North Andover	Alpha Sigma Phi.
Blatchford, Ethel Winifred	Attleboro	120 Pleasant Street.
Bourgeois, George Albert, III	Williamsburg	Williamsburg.
Bowler, Gerald Thomas	Westfield	Q. T. V.
Bresnick, Samuel	Revere	9 Phillips Street.
Brown, Chester Cromwell	Wayland	Phi Sigma Kappa.
Brown, Richard Mills	Springfield	Kappa Sigma.
Brown, Thurl Dryden	Danvers	Alpha Gamma Rho.
Burke, Raymond Francis	Woronoco	Q. T. V.
Burr, Franklin Gilmore	Worthington	Lambda Chi Alpha.
Bush, Louis Joseph	Turners Falls	66 Lincoln Avenue.
Caird, David William	Dalton	Inwood.
Campbell, Ruth Dexter	Springfield	Draper Hall.
Cande, Elinor Sherman	Sheffield	Abigail Adams House.
Carl, Erma Marie	Holyoke	Smith's Ferry, Holyoke.
Casey, Charlotte Belcher	Easthampton	70 Lincoln Avenue.
Caswell, Carolyn Marieta	Shattuckville	Abigail Adams House.
Chapin, Norton Spencer	Asonet	West Pelham, R. F. D. 2.
Chase, Donald William	Haverhill	72 Lincoln Avenue.
Chase, Greenleaf Tucker	Newburyport	French Hall.
Chesbro, Wallace Lea	Osterville	Kappa Epsilon.
Clark, Frederick Griswold	West Deerfield	Q. T. V.
Clark, Margaret Lydia	Greenfield	46 McClellan Street.
Clow, Edmund James	Orange	Lambda Chi Alpha.

¹ Candidate for Degree of Bachelor of Vocational Agriculture.

Coldwell, Raymond Dunham	Framingham	West Experiment Station.
Cole, Kendrick McDowell	Needham	7 Nutting Avenue.
Cole, Randall Knight	West Medway	Alpha Gamma Rho.
Coleman, Robert Taylor	Boston	35 Lincoln Avenue.
Cook, Elizabeth Addie	Shrewsbury	Abigail Adams House.
Cook, Frances Lora	Waltham	8 Allen Street.
Cooke, Theodore Frederic, Jr.	Richmond	Alpha Sigma Phi.
Coombs, Charles Edwin	Holyoke	86 Pleasant Street.
Cosgriff, David Edward	Springfield	Sigma Phi Epsilon.
Costa, Flory Gloria	North Agawam	74 Moore St., North Agawam.
Costello, Raphael Fiorani	Franklin	86 Pleasant Street.
Cowing, Roy Tapley	West Springfield	Alpha Sigma Phi.
Crean, Margaret Patricia	Turners Falls	Montague City Road, Turners Falls.
Cummings, Herbert Vincent	Berlin	Lambda Chi Alpha.
Cutler, Richard Thompson	South Sudbury	Q. T. V.
Cutler, Roland Rogers, Jr.	South Sudbury	The Davenport.
Dance, Darrell Alderson	Windsor, Conn.	83 Pleasant Street.
Daniels, Douglas Gordon	Reading	83 Pleasant Street.
Denmark, Hyman Samuel	Holyoke	34 McClellan Street.
Dexter, Ralph Warren	Gloucester	Davenport Inn.
Duckering, Florence Augusta	Dorchester	Abigail Adams House.
Dunham, Wilmot Grant	Centerville	Alpha Gamma Rho.
Dunphy, Charles Henry	Palmer	Lambda Chi Alpha.
Durell, William Donald	Attleboro	Theta Chi.
Edney, James Palmer	South Acton	Theta Chi.
Einbinder, Celia Harriet	Springfield	70 Lincoln Avenue.
Ellis, Catherine MacInnis	East Brewster	6 Allen Street.
Esselen, William Brigham, Jr.	Millis	Q. T. V.
Farrar, John Biggs	South Lincoln	2 Mt. Pleasant.
Fisher, Josephine Frances	Jamaica Plain	24 North Prospect Street.
Flynn, James Henry	Easthampton	129 Park St., Easthampton.
Freedman, Alexander Harvey	Dorchester	Delta Phi Alpha.
French, Chester Leroy	Greenfield	Sigma Phi Epsilon.
French, Marjorie Louise	West Newton	6 Allen Street.
Frigard, Wilho	Maynard	Lambda Chi Alpha.
Fagnon, Russell Thomas	Gloucester	Alpha Sigma Phi.
Ferrard, Barbara Kimball	Holyoke	13 Fearing Street.
Filbert, Vincent Cooper	Belmont	R. F. D. 2, West Pelham.
Forey, Robert Francis	South Deerfield	Sigma Phi Epsilon.
Green, Arthur Allerton	Windsor, Conn.	c/o Hobart, No. Amherst.
Junn, Alice Severance	Turners Falls	10 High Street, Turners Falls.
Jager, Fanny Abigail	South Deerfield	113 Main Street.
Harvey, Edward Winslow	Amherst	Kappa Sigma.
Hast, Lillian Hannah	Worcester	8 Allen Street.
Healey, Elsie	Lee	24 North Prospect Street.
Henry, Ralph Joseph	Methuen	Mathematics Building.
Herbert, Charles Reitz	Quincy	108 Pleasant Street.
Hiland, Page Livingston	Great Barrington	Lambda Chi Alpha.
Hill, Nathaniel Bartram	Amherst	State College Bungalow.
Hillberg, Pauline Louise	Pittsfield	Abigail Adams House.
Hogland, Deacom DeForest	Waltham	Alpha Gamma Rho.
Hodgen, Alden Reginald	Hubbardston	Baker Lane.
Hoffman, Archie Arthur	Amherst	9 Phillips Street.
Hurwitz, Charles	Springfield	296 Franklin St., Springfield.
Jackson, Harriette Morgan	Orange	Abigail Adams House.
Jackson, Robert Crompton	New Bedford	Kappa Epsilon.
Jenkins, Herbert	Lawrence	Stockbridge Hall.
Jensen, Marjorie Ann	Worcester	Birch Lawn.
Jibbe, Milton Homer	West Springfield	Alpha Sigma Phi.
Jlar, James Shepard	Springfield	6 Nutting Avenue.
Jozlowski, William	Lynn	6 Nutting Avenue.
Juchinski, Karol Joseph	Amherst	15 North East Street.
Jandsman, Eliot	Dorchester	3 Cosby Avenue.
JeClair, Charles Alonzo	Amherst	48 Pleasant Street.
Jincoln, Stephen Albert	Oakham	Phi Sigma Kappa.
Jister, William Seaton, Jr.	Stoneham	18 Nutting Avenue.
Jojko, Joseph	Northampton	13 Warfield Place, Northampton.
Jucey, Alexander Ambrose	Medford	83 Pleasant Street.
JacCleery, Russell Eldridge	Winthrop	Stockbridge Hall.
JacDonald, Kathleen Jane	Greenfield	Abigail Adams House.
Jackimnie, James Paige	North Amherst	North Amherst.
JacMackin, Carleton Archie	Lancaster	Theta Chi.
Jagay, Robert Andrew	Worcester	Theta Chi.
JacCarthy, Shirley Elizabeth	Greenfield	Box 475, Amherst.
JacGuckian, Ambrose Thomas	Roslindale	Q. T. V.
Jerrill, Arthur Carlton, Jr.	Rockport	Apiary, M. S. C.
Jerrill, James Willis	South Hadley Falls	179 Willimansett Street, South Hadley Falls.
Joady, George Deming	North Andover	57 Lincoln Avenue.
Jewton, Aaron Wayne	East Northfield	Alpha Sigma Phi.
Jichols, Nathan Paddock	Montpelier, Vt.	Kappa Sigma.
Jisbet, Fred Jouett	Roslindale	6 Nutting Avenue.
Joble, Robert Gillette	Florence	Davenport Inn.
J'Neil, Cornelius Francis	Northampton	2 Warfield Place, Northampton.
Japp, Walter Louis	North Falmouth	13 Phillips Street.
Jaslee, Sarah Augusta	Woodville	2 Farview Way.

Potter, Harold Carpenter	Greenfield	Sigma Phi Epsilon.
Pozzi, John Frank	North Adams	Sigma Phi Epsilon.
Pushee, Ruth	North Amherst	North Amherst.
Pyenson, Harry	East Lee	Delta Phi Alpha.
Redman, Ruth Sanderson	Amherst	6 Nutting Avenue.
Robbins, Burns	Boston	3 Cosby Avenue.
Robertson, James Walter, Jr.	Boston	Box 36, North Amherst.
Rogers, Mark Henry	West Newbury	7 Phillips Street.
Rowland, Laura Elizabeth	Springfield	Abigail Adams House.
Royal, Raymond Edward	Adams	33 Lincoln Avenue.
Russell, Nancy Elizabeth	Springfield	6 Allen Street.
Ryan, Alvan Sherman	Needham Heights	North College.
Schenck, Wolcott Lawrence	Longmeadow	Lambda Chi Alpha.
Seperski, Stanley Francis	East Pepperell	Q. T. V.
Sherman, Albert	Malden	10 Nutting Avenue.
Shuman, Harold	Dorchester	East Experiment Station.
Sibson, James Albert	Milford	Kappa Sigma.
Sievers, Howard Ralph	Amherst	3 East Pleasant Street.
Simmons, Gladys Josephine	Pittsfield	Abigail Adams House.
Skipton, Alberta Elizabeth	Springfield	The Homestead.
Smith, Donald Hartwell	South Berlin	North College.
Smith, Edith Janette	State Line	8 Allen Street.
Snow, Russell Linnell	Arlington	Phi Sigma Kappa.
Southworth, Warren Hilbourne	Lynn	6 Nutting Avenue.
Steffek, Edwin Francis	Westfield	42 McClellan Street.
Stephansen, Hans Paul	Guilford, Me.	Kappa Sigma.
Stockbridge, Robert Reed ¹	Worcester	72 Lincoln Avenue.
Stoeber, Florence Pauline	Adams	6 Allen Street.
Sturtevant, Russell	Halifax	Kappa Epsilon.
Taft, Russell Eugene	Greenfield	Lambda Chi Alpha.
Talbot, Edward James	Springfield	Sigma Phi Epsilon.
Taylor, Elizabeth Alton	Holyoke	46 McClellan Street.
Taylor, Mary Isabelle	Groton	Abigail Adams House.
Thomas, Winthrop Snowdon	West Newton	35 Lincoln Avenue.
Thompson, Walter Earl	South Hadley	Alpha Sigma Phi.
Tiffany, Grace Elizabeth	Holyoke	53 Commercial Street, Holyoke.
Tomlinson, Mary Arundale	West Newton	61 Lincoln Avenue.
Trow, Francis Gilman	Buckland	23 Sunset Avenue.
Walker, Henry Atchinson	Southbridge	Alpha Gamma Rho.
Watson, Vernon Kenneth	Amherst	5 East Pleasant Street.
Weinberger, Benjamin	Dorchester	Delta Phi Alpha.
Wheeler, Elizabeth	Worcester	8 Allen Street.
Wheeler, Nelson Adrian	Belchertown	8 Nutting Avenue.
Whitney, Joseph Adolphus	Northampton	61 Fairview Street, North- ampton.
Wilcox, Joan Elizabeth	Boston	Birch Lawn.
Woodbury, Frances	Malden	15 Fearing Street.
Wordell, Hillman Hathaway	Somerset	Alpha Gamma Rho.
Wyman, Edward Rochford	Turners Falls	84 Pleasant Street.
Zielinski, Joseph Francis	Holyoke	86 Pleasant Street.
Zillman, Joseph Frank	Dorchester	3 Cosby Avenue.

CLASS OF 1935.

Abbott, Robert West	Falmouth	Kappa Epsilon.
Allen, Mary Louise	Greenfield	Abigail Adams House.
Allen, Robert John, Jr.	Worcester	Phi Sigma Kappa.
Andrews, Frederick Newcomb ¹	South Weymouth	53 Lincoln Avenue.
Arenberg, David Lewis	Rochester	97 Pleasant Street.
Arenberg, Isaac Moses	Rochester	97 Pleasant Street.
Arnold, Stuart Aborn	Rehoboth	Alpha Sigma Phi.
Ashley, Madelyn Gertrude	Greenfield	13 Fearing Street.
Avery, Ruth Anna	Pocasset	Abigail Adams House.
Bailey, John Lewis	Kingston	Alpha Sigma Phi.
Barr, Iona Elizabeth	Greenfield	8 Allen Street.
Bartlett, Dorothy Eleanor	Chicopee Falls	61 Lincoln Avenue.
Bartlett, Helen Elnora	Framingham	The Homestead.
Bearse, Carleton Everett	Sharon	81 Pleasant Street.
Beebe, Helen Elizabeth	Monson	Abigail Adams House.
Bell, Vernon Adam Veith	Amherst	11 Cottage Street.
Bernstein, Anna Judyth	Greenfield	Abigail Adams House.
Bertorelli, Ollie Leonard	Milford	9 Phillips Street.
Bingham, Laura	Athol	Abigail Adams House.
Blackburn, James William	Springfield	Tilton Court.
Blackburn, Roger Tait	Stoneham	18 Nutting Avenue.
Blake, Lamont Vincent	Springfield	83 Pleasant Street.
Bliss, Sheldon Pratt	Greenfield	72 Lincoln Avenue.
Bower, William Austin	North Andover	Kappa Sigma.
Boynton, Willard Harold	Groveland	Baker Lane.
Bozian, George	Fall River	97 Pleasant Street.
Brayden, Walter Edward	Maynard	Kappa Epsilon.
Brennan, Mary Teresa	Ipswich	22 Fearing Street.
Brooks, Marion Emily	Worcester	8 Allen Street.
Brown, William Clay	Winchester	18 Nutting Avenue.
Brune, Gunnar Magnus	Pittsfield	72 Lincoln Avenue.
Burgess, Albert Franklin, Jr.	Greenfield	Phi Sigma Kappa.
Curke, Francis Campbell	Clinton	Phi Sigma Kappa.
Cahoon, Kenneth Bangs	Centerville	35 East Pleasant Street.
Caron, Francis Leo	North Adams	Sigma Phi Epsilon.
Caswell, John Alden	Milford	83 Pleasant Street.

¹ Candidate for Degree of Bachelor of Vocational Agriculture.

Caverly, Lorraine Marcia	Haverhill	The Homestead.
Clark, Curtis Mason	Millis	Q. T. V.
Clark, Lester Wilbur	Montague	Montague.
Clark, Philip Hartshorn	Waltham	26 Fearing Street.
Cleary, Joseph George	New London, Conn.	Q. T. V.
Coburn, Joseph Lyman	East Walpole	Kappa Sigma.
Colman, John Pickhardt	Cambridge	Alpha Sigma Phi.
Colson, Alma Hough	North Agawam	33 Church Street, North Agawam.
Conary, Warren Preston	Braintree	13 Hallock Street.
Cone, William Howard	Fairfield, Conn.	Q. T. V.
Congdon, George Steadman	Millis	Q. T. V.
Connery, Ellen Rose	Easthampton	3 Knight Avenue, Easthampton.
Connolly, Helen Margaret	Hadley	Hadley.
Consolati, John Joseph	Lee	Kappa Epsilon.
Cook, Dorothy Flora	Amherst	R. F. D. 1.
Corcoran, Frederick Leo	Stoneham	18 Nutting Avenue.
Corcoran, Hugh Joseph	Westfield	Q. T. V.
Cox, Alfred Elmer	Bridgewater	27 Fearing Street.
Cox, Kenneth MacKenzie	West Springfield	Q. T. V.
Cross, Chester Ellsworth	Onset	Theta Chi.
Cumming, Roderick Wells	Bristol, Conn.	Q. T. V.
Currier, Marie Eleanor	Amesbury	8 Allen Street.
Daniels, Charles Howard	Melrose	Phi Sigma Kappa.
Davis, Myron Carl	Stafford Springs, Conn.	Alpha Gamma Rho.
Davis, William Milford	South Lee	83 Pleasant Street.
Dearden, Amy	Palmer	Abigail Adams House.
Dennis, Gordon Bowman	Framingham	4 Hallock Street.
DiMarzio, Raymond	North Plymouth	Alpha Sigma Phi.
Dimock, Catharine Elizabeth	Longmeadow	13 Fearing Street.
Dobbie, Howard Ralph	Haverhill	42 Lincoln Avenue.
Dolan, Bernice Jo-Ann	Turners Falls	15 Fearing Street.
Donaldson, Marilyn Arberta	Springfield	25 Abbe Avenue, Springfield.
Doran, Dorothy Frances	Springfield	19 Phillips Street.
Doyle, Bernard Joseph	Northampton	Kappa Epsilon.
Dubie, Ralph Peter	Turners Falls	Millers Falls Road, Turners Falls.
Dubin, Max	Malden	56 Pleasant Street.
Dwight, Alice Isabel	Griswoldville	12 North East Street.
Dworman, Joseph Aaron	Worcester	Delta Phi Alpha.
Eaton, Frank Warren	Waltham	Lambda Chi Alpha.
Elder, Henry Holton	Mount Hermon	118 Pleasant Street.
Eldridge, John Crosby	West Bridgewater	86 Pleasant Street.
Elliott, Charles Francis	Waltham	26 Fearing Street.
Epstein, Henry David	Brookline	Care of Howard, North Pleasant Street.
Evans, John Robert	Arlington	Phi Sigma Kappa.
Evans, Raymond Knightly	Easthampton	Alpha Sigma Phi.
Fay, Florence Chesson	Chicopee Falls	29 Lincoln Avenue.
Feinberg, Abraham	Dorchester	7 Phillips Street.
Fisher, Ernest Brayton, Jr.	Walpole	Alpha Gamma Rho.
Flack, Erna Martha	Northampton	37 Pleasant Street.
Foley, Cornelia Frances	Amherst	19 Phillips Street.
Foley, Daniel Joseph	Salem	Q. T. V.
Fowler, Charles Bostwick	West Newton	Kappa Sigma.
Frey, Christine Louise	South Hadley Falls	9 Prospect Street, South Hadley Falls.
Friedrich, Lois Florence	Florence	Abigail Adams House.
Gary, Myrtle Stebbins	Montague City	15 Fearing Street.
Gavagan, James Edward	Dorchester	Box 36, North Amherst.
Gendler, Minnie	Greenfield	23 Beech Street, Greenfield.
Genest, Edward Harry	Pittsfield	84 Pleasant Street.
George, Clayton Herman	Belchertown	Belchertown.
Gillette, Willard Raymore	Billerica	32 North Prospect Street.
Gold, Arthur	Springfield	56 Pleasant Street.
Golub, Barnett Louis	East Longmeadow	105 Porter Road, East Longmeadow.
Goulart, Grace Mae	Fairhaven	8 Allen Street.
Govoni, Irene Edna	North Agawam	Draper Hall.
Granger, Ralph Hawthorne	Westfield	M. S. C. Farmhouse.
Griffin, Julian Philip	Indian Orchard	Kappa Sigma.
Griswold, Norman Bulkeley	Hartford, Conn.	Sigma Phi Epsilon.
Guenard, Edward Frederick	Dracut	Tilson Court.
Guion, Ellen	Newton	22 Fearing Street.
Gunn, Evelyn Alice	Southampton	c/o Taylor, North Amherst.
Gurka, Joseph John	Ware	10 McClellan Street.
Guzowski, Victor Stanley	Northampton	64 Nonotuck Street, Northampton.
Hall, Eben Theodore	Upton	Phi Sigma Kappa.
Harrington, Elizabeth Katherine	Ludlow	70 Lincoln Avenue.
Harris, Marion Threasa	Leominster	Abigail Adams House.
Harris, Robert Russell	Leominster	8 Nutting Avenue.
Hartwell, George Albert	Malden	84 Pleasant Street.
Hermanson, Robert Harlow	Boston	Delta Phi Alpha.
Hinckley, Howard Lester, Jr.	Dorchester	Alpha Sigma Phi.
Hovey, Albert Bancroft	Wakefield	81 Pleasant Street.
Hovey, Mildred Martina	Springfield	Abigail Adams House.
Hovey, Wendell Roy	Wakefield	84 Pleasant Street.

¹ Candidate for Degree of Bachelor of Vocational Agriculture.

Hubbard, Richard William	Sunderland	Sunderland
Hunter, Robert Packard	Melrose	Phi Sigma Kappa.
Hutchinson, Charles Wooding	Amherst	33 Northampton Road.
Jackimezyk, Zigmund John	Florence	Q. T. V.
Jaworski, Ernest Anthony	Adams	Kappa Epsilon.
Jersauld, Ralph Earl	Newtonville	Eames Avenue.
Jillson, Stuart Farnham	Readsboro, Vt.	Baker Lane.
Johnson, Walter Oscar	Haverhill	2 Mt. Pleasant.
Jordan, William Joseph, Jr.	Revere	7 Nutting Avenue.
Keil, Joseph Francis	Attleboro	7 Nutting Avenue.
Kelleher, Bernard John	Turners Falls	Sigma Phi Epsilon.
Kellogg, Eloise Beers	Arlington	c/o E. B. Hobart, North Amherst.
Kiely, James Maurice	Northampton	29 Henshaw Avenue, Northampton.
Kimball, Leslie Collis	Pelham	1 Harkness Road, Pelham.
Kingsbury, Harlan Wesley	Braintree	86 Pleasant Street.
Kingston, Mary Emma	Springfield	Abigail Adams House.
Koch, Robert Magoon	Greenfield	Sigma Phi Epsilon.
Koskela, Violet Sylvia	Maynard	c/o Carter, North Amherst.
Landis, Albert Broudy	Amherst	2 Allen Street.
Lannon, Marjorie Louise	Holyoke	24 North Prospect Street.
Leary, June Margaret	Holyoke	5 Gilman Street, Holyoke.
Leary, Theodore Moreau	Turners Falls	Sigma Phi Epsilon.
Leavitt, Roger Kenison	Framingham	Alpha Sigma Phi.
Lebeshevsky, Louis Herbert	Thompsonville, Conn.	56 Pleasant Street.
Levine, Arthur Sidney	Brookline	Delta Phi Alpha.
Libbey, Robert Franklin	Westboro	Phi Sigma Kappa.
Lillie, Lucien Bingham	Springfield	Lambda Chi Alpha.
Lindquist, Ruth Lydia	East Longmeadow	13 Fearing Street.
Little, Silas, Jr.	Newburyport	Alpha Gamma Rho.
Loring, Elizabeth	Melrose Highlands	Birch Lawn.
Lubin, Bertram	Boston	9 Phillips Street.
MacLaughlin, Marian Bright	Fiskeville, R. I.	Abigail Adams House.
MacQuestion, Everett Spencer	Winchendon	Box 36, North Amherst.
Malloch, Ronald Carnegie	Greenfield	Alpha Gamma Rho.
Markley, Ruth Annette	Greenfield	11 Power Court, Greenfield.
Mason, Ruby Nye	East Longmeadow	8 Allen Street.
Masters, Edward Danville	Athol	3 Nutting Avenue.
McCleery, Samuel Robert	Worcester	30 North Prospect Street.
McKelligott, John Henry	Palmer	Q. T. V.
Merry, Alma Standish	Duxbury	Abigail Adams House.
Michelson, Howard Bryne	Dorchester	West Experiment Station.
Miller, Joseph	Roxbury	Delta Phi Alpha.
Moran, James Frederick	Millis	Q. T. V.
Moulton, John Jesse	Weymouth	94 Pleasant Street.
Mountain, David Charles	Pittsfield	83 Pleasant Street.
Mozden, Walter Stanley	Three Rivers	31 Fearing Street.
Mulhall, William Paul	Ashland	Q. T. V.
Muller, William Richard	Darien, Conn.	Lambda Chi Alpha.
Murphy, Marguerite Anne	Westfield	7 State Street, Westfield.
Murray, Robert Vincent	Holyoke	Alpha Sigma Phi.
Nassif, Edward Bedre	North Adams	Sigma Phi Epsilon.
Newcomb, Stanley Stowell	Orange	Kappa Epsilon.
Newman, William Joseph MacKenzie	Florida	Alpha Gamma Rho.
Newton, Alfred Eastman	Sharon	81 Pleasant Street.
Nietupski, Peter Andrew	Three Rivers	10 McClellan Street.
Norris, Ralph	Sharon	Kappa Epsilon.
Novick, Julius	Amherst	56 Pleasant Street.
O'Brien, Allan John	Northampton	124 South Street, Northampton.
Packard, Edward Lawrence	Amherst	8 College Avenue.
Parker, Leonard Ward	Amherst	142 West Street.
Parsons, Katherine Davenport	Lynn	Care of Carter, North Amherst.
Pease, George Raymond	Amherst	13 East Pleasant Street.
Pease, Howard Edson	Ashfield	Q. T. V.
Pelissier, Ruth Elizabeth	Hadley	48 East Street, Hadley.
Perry, Elizabeth Cushman	Watertown	6 Allen Street.
Pollin, Leo	Springfield	88 Ferry Street, Springfield.
Powers, Helen Louise	Hadley	41 Russell Street, Hadley.
Prentiss, Edward LeRoy	Upton	Phi Sigma Kappa.
Putnam, Shirley Dorothy	Springfield	13 Fearing Street.
Raleigh, Walter Dalton	West Springfield	Sigma Phi Epsilon.
Ramsdell, Albert Bradbury	Palmer	9 Phillips Street.
Reed, Ruth Vassall	Waltham	22 Fearing Street.
Riseman, Henry Frank	Revere	3 Cosby Avenue.
Robbins, Virginia Judd	Norwich, Conn.	Abigail Adams House.
Robinson, Phillip	Revere	7 Phillips Street.
Rod, Sylvia Lillian	Becket Centre	Abigail Adams House.
Salamoff, Sydney Arthur	Roxbury	9 Phillips Street.
Sargent, Janet Christie	Auburndale	Birch Lawn.
Sargent, Ruth Wentworth	Wollaston	Abigail Adams House.
Savaria, Thomas Joseph	Ware	Q. T. V.
Schaffner, Paul Webster	Dover	French Hall.
Schlaefler, William	Englewood, N. J.	66 Lincoln Avenue.
Schreiter, Ralph William Francis	Walpole	Lambda Chi Alpha.
Schubert, Bernice Giduz	Boston	Abigail Adams House.
Scott, William Arthur	Bloomfield, Conn.	Phi Sigma Kappa.
Senecal, Willard	Florence	Kappa Sigma.
Shapiro, Maurice	North Adams	56 Pleasant Street.

Barff, Hyman	Chelsea	56 Pleasant Street.
Baw, Glenn Frederick	Palmer	Alpha Gamma Rho.
Bira, Raymond John	Centerville	Baker Lane.
Bimmons, George Walker	South Amherst	66 Lincoln Avenue.
Bleep, Charlotte Fogwell	Fitchburg	Abigail Adams House.
Bmiaroski, Joseph Nieckoski	Deerfield	66 Lincoln Avenue.
Bmith, Marion Estelle	Greenfield	24 North Prospect Street.
Bnow, Samuel Peaslee	West Roxbury	66 Lincoln Avenue.
Breadman, Kenneth Austin	Needham	Kappa Sigma.
Btepat, Walter	Braintree	45 Fearing Street.
Btevens, Nelson Pierce	Haverhill	Kappa Epsilon.
Btewart, Donald Mitchell	Arlington	84 Pleasant Street.
Btone, Philip Carlton	Athol	Phi Sigma Kappa.
Btreeter, Helen Guild	Springfield	Abigail Adams House.
Bumner, James Ellsworth	Quincy	13 Phillips Street.
Bani, Sulo John	Worcester	94 Pleasant Street.
Bannenbaum, Harold Samuel	Dorchester	9 Phillips Street.
Bhatcher, Eleanor Charlotte	Athol	Abigail Adams House.
Bhayer, Carrol Edwin	Williamsburg	32 North Prospect Street.
Bhompson, Wallace Wetherell	Worcester	Theta Chi.
Bhornton, Edna	Amherst	7 High Street.
Bikofski, Adolph Edward	Walpole	Baker Lane.
Binti, Corada Sarah	North Agawam	22 King Street, North Agawam.
Birrell, Wilbur Greene	South Weymouth	Eames Avenue.
Bosches, Joseph John	Milford	9 Phillips Street.
Bramposch, Emil John	Huntington Station, L. I., N. Y.	Q. T. V.
Bcrask, Owen Smith	Lexington	Theta Chi.
Bcalentine, James Jackson	Framingham	Theta Chi.
Bereling, John Peter	East Weymouth	Stockbridge Hall.
Bwallace, Donald Andrews	Arlington	Alpha Sigma Phi.
Bvarner, Roger Lewis	Williamsburg	Phi Sigma Kappa.
Bveiner, Myer Louis	Malden	Delta Phi Alpha.
Bwhitton, Gladys Dorothy	North Adams	70 Lincoln Avenue.
Bvihry, Benjamin Joseph	Haverhill	Q. T. V.
Bwillard, Luther Lincoln	Worcester	Q. T. V.
Bwillard, Robert Pierce	Malden	83 Pleasant Street.
Bwilliams, Lester Alfred	Melrose	Phi Sigma Kappa.
Bvinokur, Louis Isaac	Dorchester	86 Pleasant Street.
Bvood, John Langille	Greenfield	Sigma Phi Epsilon.
Bvood, Paul Owen	New York, N. Y.	Phi Sigma Kappa.
Bvood, Robert Holman	West Upton	Phi Sigma Kappa.
Bvewski, Walter Bernard	Northampton	357 Bridge Street, Northampton.
Bucker, Dante	Holyoke	67 Lincoln Avenue.
CLASS OF 1936.		
Bbbott, Charlotte Louise	Quincy	Abigail Adams House.
Bbdams, Ralph Terry	Athol	North College.
Bbdams, Vinton Roy	East Lee	83 Pleasant Street.
Bbllen, Elmer Howes	South Hadley	8 Woodbridge Street, South Hadley.
Bbllen, George Howard	Westboro	42 McClellan Street.
Bbllen, Roger Everett	Shrewsbury	42 Cottage Street.
Bbllis, Gertrude Helen	Conway	35 Woodside Avenue.
Bbnacki, Michael	West Suffield, Conn.	30 North Prospect Street.
Bbndersen, Edward Popp	Pittsfield	30 North Prospect Street.
Bbnderson, Philip Brigham	Framingham	c/o Hobart, North Amherst.
Bbndrus, Harriett Katherine	Springfield	Abigail Adams House.
Bbnnold, Ralph Alexander	Franklin	86 Pleasant Street.
Bbntias, Herbert Bernard	Mattapan	4 Tillson Court.
Bbboock, Chester Ira, Jr.	Newtownville	North College.
Bbbs, Barbara Edwards	Belchertown	Belchertown.
Bbbsman, Louis Gerald	Chelsea	19 Pleasant Street.
Bbbsman, Maurice Herman	Chelsea	19 Pleasant Street.
Bbaker, Elizabeth Weston	Braintree	Abigail Adams House.
Bbalovich, Daniel Algerd	North Andover	42 McClellan Street.
Bbscanoff, George	Worcester	South College.
Bbaldwin, Edward Estle	Boonton, N. J.	15 Phillips Street.
Bball, Marjorie Elizabeth	Pittsfield	Abigail Adams House.
Bballou, Donald Murch	Holyoke	North College.
Bbarrows, Randolph Corbin	Stafford Springs, Conn.	North College.
Bbarton, Jackson Arthur	Boston	4 Tillson Court.
Bbarton, Kenneth Arthur	Dalton	54 Lincoln Avenue.
Bbattles, Allin Cloud	Sherborn	South College.
Bbecker, Philip	Easthampton	North College.
Bbbsky, Florence Selma	Springfield	Abigail Adams House.
Bbbshop, Gordon Harold	Athol	North College.
Bbbsby, Arthur Frederick	Sunderland	Sunderland.
Bbbschfield, Alice Joanne	Easthampton	Abigail Adams House.
Bbbsula, Paul Frederick	West Roxbury	North College.
Bbbszogni, Columbus Charles	West Springfield	Alpha Sigma Phi.
Bbbsworth, Clare Elizabeth	Holyoke	44 Amity Street.
Bbbscher, Mary Elizabeth	Easthampton	Abigail Adams House.
Bbbsylan, Myles Gerald	Watertown	North College.
Bbbsadley, Barbara Barker	Southfield	Draper Hall.
Bbbsennan, Owen Joseph, Jr.	Wheelwright	North College.
Bbbsidges, Ella Mabel	South Deerfield	South Deerfield.
Bbbsiere, Arnold Charles	Holyoke	168 Essex Street, Holyoke.
Bbbsitton, Elva Louise	Pittsfield	Abigail Adams House.

¹ Candidate for Degree of Bachelor of Vocational Agriculture.

Brown, Chester Zell	Belmont	North College.
Browning, Ernestine Charlotte	Springfield	Abigail Adams House.
Brueckner, Alfred Herold	Springfield	North College.
Bruns, Helen Norris	Somerville	Abigail Adams House.
Bull, Frederick Kemmerer	Springfield	North College.
Bullard, Marian Elizabeth	Orange	Draper Hall.
Cance, Edmond Leland	Amherst	9 Fearing Street.
Carbonneau, Leo William	Ware	48 Pleasant Street.
Carey, Reginald Sidney, Jr.	South Hadley	83 Pleasant Street.
Cawley, Mary Alice	Winthrop	Abigail Adams House.
Chase, Madelin	Winthrop	Draper Hall.
Chase, Milton Earle	Monument Beach	North College.
Chilson, William Wallace	Northampton	North College.
Clancy, Margaret Adele	Dedham	Abigail Adams House.
Clapp, James Wellington	Springfield	North College.
Clark, Louis Frederick	Northampton	R. F. D. 2, Northampton.
Clark, Marguerite Cora	Westfield	70 Lincoln Avenue.
Clark, Robert Brown	Sharon	81 Pleasant Street.
Clarke, James Roe	Milton, N. Y.	North College.
Collins, Leo Wendell	Millis	North College.
Congdon, Frederick Richard	Great Barrington	North College.
Connolly, Francis Edward	Peabody	45 Fearing Street.
Cook, Philip Richard	Haydenville	North College.
Cooney, Mary Abbie	Stockbridge	Abigail Adams House.
Corcoran, Dorothy Mary	Stoneham	Abigail Adams House.
Crabtree, Anita	Gardner	Abigail Adams House.
Crabtree, Lois	Gardner	Abigail Adams House.
Craft, Clayton Chester	Ashfield	35 North Prospect Street.
Craig, Philip Adam	Barre, Vt.	South College.
Crocker, William Daniel	Ashfield	35 North Prospect Street.
Croft, John	Greenfield	South College.
Cunningham, David William	Lowell	North College.
Curtis, George Edmund	Taunton	21 Woodside Avenue.
Cuthbertson, Kenneth Earl	Montague	Montague.
Czajkowski, Janina Mary	Amherst	R. D. 3, Box 88.
Danaczko, John	South Hadley	26 Ferry Street, South Hadley.
Davidson, James	Norwood	31 Fearing Street.
Davis, Frederick Leroy	Portland, Me.	North College.
DeFelice, Domenic	Belmont	South College.
Desmond, Richard Clancy	Lynn	75 Northampton Road.
deWilde, Louis	Shiloh, N. J.	North College.
Dimock, Ralph Warren	Oxford	3 Triangle Street.
Dodge, Albert Winslow	Wenham	North College.
Donnelly, Donald Tracy	Chester	North College.
Driscoll, Frances Mary	Holyoke	Abigail Adams House.
Driscoll, Paul John	Northampton	303 Prospect Street, Northampton.
Dunbar, Malcolm Ramsey	Barre	Baker Place.
Dunker, Carl Frederick	Holyoke	South College.
Eaton, Alden Robinson	North Reading	South Amherst.
Elliot, Allan Boynton	Florence	South College.
Fallon, John Thomas	Holyoke	South College.
Farrell, Kenneth Thomas	Brookline	67 Lincoln Avenue.
Feldman, Joseph Arnold	Northampton	94 Williams Street, Northampton.
Ferguson, Herbert William	Pittsfield	North College.
Fillmore, Eleanor Clarke	Melrose	Abigail Adams House.
Finkelstein, Carlton Jesse	Revere	South College.
Fisher, Allyn Hubbard	Norwood	North College.
Fisher, Robert Bernard	Northampton	43 Summer Street, Northampton.
Fitzgerald, Patrick James	Haverhill	83 Pleasant Street.
Flynn, Anna Agnes	Millers Falls	Abigail Adams House.
Ford, Marguerite Marianne	Brockton	Abigail Adams House.
Franco, John Estrela	East Falmouth	South College.
Frank, Melvin Herbert	Roxbury	2 Allen Street.
Fuller, Louis Edward	Belchertown	North College.
Galbraith, Louise Fannie	Greenfield	Abigail Adams House.
Garbar, Samuel	Holyoke	34 McClellan Street.
Garbose, Dorothy	Gardner	Abigail Adams House.
Gardner, Alfred Hamilton, Jr.	Belmont	27 Fearing Street.
Gates, Chester Mason	Southbridge	South College.
George, Murray Winter	Wrentham	Eames Avenue.
Gillett, Kenneth Edward	Southwick	42 Lincoln Avenue.
Gillett, Lewis Chapman	Littleton	South College.
Gingras, Irene Virginia	Blackinton	Abigail Adams House.
Glazier, Lynn Rodney	Leverett	Leverett.
Glick, Dean Newton	Amherst	27 Fearing Street.
Glickstein, Myer	Chelsea	South College.
Glynn, Charles Nelson	Springfield	South College.
Goddard, William Leonard, Jr.	Littleton	Sunset Avenue.
Gold, Arthur Jacob	Dorchester	56 Pleasant Street.
Gold, Hyman	Dorchester	67 Lincoln Avenue.
Goodrow, John Lawrence	Northampton	175 North Elm Street, Northampton.
Gottesman, Irwin Selnick	Springfield	North College.
Govone, Louise Charlotte	Sandwich	Abigail Adams House.
Graves, Russell Thompson	Northampton	236 Grove Street, Northampton.
Greene, Edmund Arthur	Boston	North College.
Greenwood, Frank	Methuen	c/o Prof. Sears, Mt. Pleasant.

Griswold, Russell Lancaster	Lancaster	South College.
Haffer, Louis Paul	Revere	South College.
Hagar, William Henry, Jr.	Dalton	North College.
Hager, Elizabeth Warner	South Deerfield	South Deerfield.
Hakanson, Christine Evelyn	Worcester	Abigail Adams House.
Hale, Harold Homer	Tolland	81 Pleasant Street.
Haley, Louise Mary	Chester	Draper Hall.
Hall, Constance Hathaway	Sharon	Abigail Adams House.
Hall, Joseph William	Brookline	9 Fearing Street.
Hannum, Calvin Siddell	Pittsfield	North College.
Hartin, Forrest Dana	Maynard	North College.
Hartwell, Priscilla Frances	Dover	Draper Hall.
Haselbuhn, Donald Henry	Springfield	45 Fearing Street.
Higgins, Eugene Vincent	Blackstone	
Hixon, Adin Allyne	Worcester	South College.
Hobart, Merrill Spinney	Needham	North College.
Hopkins, Alice Lillian	Orleans	Draper Hall.
Horrigan, Leonta Gertrude	West Springfield	Draper Hall.
Howland, Priscilla Ruth	Conway	Conway.
Hutchinson, Margaret Lois	Amherst	33 Northampton Road.
Jackson, Edith Lillian	North Middleboro	Abigail Adams House.
Jenney, Frederick	Kingston	North College.
Johnson, Carroll Reed	Shirley	30 North Prospect Street.
Johnson, David Lewis	Holden	North College.
Johnson, Harry Agnew	Northboro	North College.
Johnston, William Francis	Worcester	30 North Prospect Street.
Kaplan, Sylvia	Cambridge	Draper Hall.
Kaplovitz, Maxwell	Winthrop	South College.
Kaufman, Allen Max	Dorchester	56 Pleasant Street.
Keefe, Robert Alexander	Franklin	North College.
Kellogg, Virginia Knight	Amherst	20 Amity Street.
Kempton, Joseph Van Tuyl	Northampton	226 Crescent Street, Northampton.
Kennett, Richard Tomfohrde	West Medford	3 Nutting Avenue.
Kerr, Theodore William, Jr.	Medford	46 Pleasant Street.
King, Priscilla	Melrose	Abigail Adams House.
Kleyla, Mildred Elizabeth	South Deerfield	South Deerfield.
Klickstein, David	Malden	1 Cosby Avenue.
Koenig, Emil John	Jefferson	62 Pleasant St.
Krasnoff, Joseph Harold	Roslindale	South College.
Krtil, Charles Lewis	Westfield	46 Pleasant Street.
Kugler, Herbert Paul	Easthampton	92 Holyoke Street, East- hampton.
Kulya, Richard Alvah	Greenfield	North College.
Kurau, Sheldon Catlin	Torrington, Conn.	North Pleasant Street, care of Gaskell.
Laite, George Norbury	Rowley	45 Pleasant Street.
Lake, Richard Hudson	Westfield	North College.
Laubenstein, Norvin Clement	Maynard	North College.
Law, Edward Victor	Belmont	North College.
Leahy, Ruth Ann	Worcester	Abigail Adams House.
LeClair, Ivan Narcisse	Southbridge	17 Nutting Avenue.
LeDuc, Marguerite Rita	Ware	Abigail Adams House.
Leonard, Eloise	Oak Bluffs	Abigail Adams House.
Levine, Lester Henry	Dorchester	10 McClellan Street.
Lewis, Walter Frederic	Andover	North College.
Liberfarb, Sidney	Boston	North College.
Lincoln, Madeline Hazel	Belchertown	Belchertown.
Lincoln, Robert Bradley	Taunton	c/o Howard, North Pleasant Street.
Lipovsky, Irving	Springfield	North College.
Logan, Robert Mellor	Lawrence	North College.
Lord, Francis Alfred	Northampton	North College.
Lord, Thomas Henry	Arlington	North College.
Lothrop, Cummings Lincoln	Hingham	North College.
Low, Elizabeth	Arlington	Abigail Adams House.
Lubach, Helen	Mattapan	Abigail Adams House.
Macek, Karl Stanley	Easthampton	117 Everett Street, East- hampton.
Macintosh, Phyllis Garry	North Dana	Abigail Adams House.
Macmaster, Duncan	Athol	South College.
MacPherson, Robert Harris	Westboro	North College.
Mallory, Evelyn Marie	Amherst	73 East Pleasant Street.
Malmquist, Hilda Astrid	Shutesbury	Shutesbury.
Mandella, Paul	Worcester	North College.
Markowitz, Alfred Jacob	Dorchester	10 McClellan Street.
Marsh, Charles William	Feeding Hills	North College.
Martin, Gertrude Evelyn	Shrewsbury	Abigail Adams House.
Masters, Dorothy Louise	Stockbridge	Abigail Adams House.
McCarthy, Francis Joseph	Rutland	
McConchie, John	Monson	10 McClellan Street.
McDermott, Kathleen Elaine	Housatonic	Abigail Adams House.
McLeod, Angus John	Ipswich	North College.
McNally, John Edmund	Palmer	9 Fearing Street.
Michaelson, Abraham Irving	Revere	South College.
Midgley, Harold Austin	Worcester	South College.
Miner, Philip Barton	Holyoke	South College.
Monroe, George Edward	Weymouth	North College.
Moran, Charles Henry	East Boston	North College.
Moriarty, Timothy Joseph	South Hadley Falls	83 Pleasant Street.

Morrison, John Roderick ¹	Boston	10 Chestnut Street.
Murphy, Fred Joseph	Belmont	South College.
Neuman, Samuel	Dorchester	South College.
Newman, Kenneth Raycraft	Hoosac Tunnel	97 Pleasant Street.
Norwood, Terrence Shanahan	Greenfield	193 Silver Street, Greenfield.
Nurmi, Dorothy	Westminster	Abigail Adams House.
O'Brien, Katherine Louise	Amherst	18 Nutting Avenue.
Olson, Oscar Evald	Amherst	Box 641.
Ordway, Ruth Mildred	Hudson	Abigail Adams House.
Packard, Clarence Adelbert	Amherst	8 College Avenue.
Parker, Howard Clarence	Bondsville	North College.
Parsons, Edith Mildred	Turners Falls	Abigail Adams House.
Paulding, Marion Louise	South Hanson	Abigail Adams House.
Pearlmutter, David Berstien	Revere	South College.
Peckham, Richard Tufts	West Medford	Eames Avenue.
Peckham, Robert Bishop	Medford	Eames Avenue.
Pineo, Clare Linwood	Mt. Tom	15 East Street, Mt. Tom.
Plastridge, Daniel Clayton	Bedford	13 Woodside Avenue.
Potter, Wendell Judson	Melrose	North College.
Pratt, Harry Davis	North Adams	10 Farview Way.
Priest, Edith Evelyn	Maynard	Abigail Adams House.
Proctor, Bessie Louise	Lunenburg	Abigail Adams House.
Proctor, Raymond Norris	Lunenburg	North College.
Przystas, Emil Albert	Adams	10 Nutting Avenue.
Puffer, Stephen Charles	Westfield	North College.
Purcell, Clement Roland	Winchester	South College.
Putnam, Oliver Ripley	Danvers	North College.
Rabinowitz, Isadore	Holyoke	19 Pleasant Street.
Rafter, Beatrice Norma	Sharon	Abigail Adams House.
Rajonsky, George	Lee	83 Pleasant Street.
Reardon, Helen Marie	Amesbury	Abigail Adams House.
Reilly, Thomas John	Schenectady, N. Y.	Eames Avenue.
Richards, Albert Peter	Monson	8 Tyler Place.
Riggs, Maida Leonard	Grafton	Abigail Adams House.
Riley, Betty Mavis	Ludlow	Alden Street, Ludlow.
Riley, Richard Grimshaw	Barre Plains	North College.
Rivers, Warren Whelden	Charlemont	97 Pleasant Street.
Roberts, Louis Everett	Lexington	57 Pleasant Street.
Roberts, Willard Cheney	Northampton	43 Monroe Street, Northampton.
Rose, Frank Edward	Winthrop	35 Lincoln Avenue.
Rose, William Arthur	Winthrop	35 Lincoln Avenue.
Roys, Charles Trescott	Sheffield	North College.
Rutstein, Jack	Everett	South College.
Ryan, James Arthur	South Hadley	Pleasant Street.
Ryan, Robert Joseph	Hatfield	58 Elm Street, Hatfield.
Ryer, Robert, III	South Hadley	Bridgeman Lane, South Hadley.
San Clemente, Charles Leonard	Milford	South College.
Sandler, Lewis Jacob	Roxbury	3 McClellan Street.
Saulnier, Florence Mae	Worcester	Abigail Adams House.
Sawyer, Helen Louise	Littleton	Abigail Adams House.
Schiff, Muriel Harriette	Adams	Abigail Adams House.
Seredynsky, Edward John	Holyoke	South College.
Shongood, Sanford	New York, N. Y.	7 Fast Street.
Shulkin, Arnold Samuel	Revere	South College.
Sjogren, Charles Norman	Easthampton	14 Chapman Avenue, Easthampton.
Smith, Francene	Walpole	Abigail Adams House.
Smith, Gladys Virginia	Westfield	Abigail Adams House.
Smith, John Arthur	Cambridge	20 Railroad Street.
Snow, Raymond Milton ¹	Lawrence	South College.
Soulliere, Edward Joseph	Worcester	North College.
Spear, Philip James	Charlemont	North College.
Stefanelli, Velda	South Hadley	16 Alvord Street, South Hadley.
Stewart, John William	Needham	North College.
Stratton, Virginia	Lee	Abigail Adams House.
Stuart, Arthur Johnston	Littleton Common	South College.
Sturtevant, Jack ¹	Lynnfield Centre	35 Lincoln Avenue.
Sullivan, Edmund Joseph	Milford	North College.
Sweinberger, Ralph Frederick	Holyoke	4 Chestnut Street.
Tanner, Royal Kendrick	Greenfield	North College.
Taylor, David Henry	Methuen	51 Amity Street.
Thayer, Charles Valentine	Amherst	Hickory Farm.
Thompson, Richard Hugh	Colrain	30 North Prospect Street.
Tubiash, Haskell Solomon	Dorchester	3 McClellan Street.
Uliana, Gildo James	Monson	10 McClellan Street.
Urban, Annie Louise	Springfield	Abigail Adams House.
Valentine, James Alden, Jr.	South Walpole	18 Nutting Avenue.
Vassos, George Arthur, Jr.	Springfield	North College.
Vickery, Gertrude Mabel	Greenfield	Abigail Adams House.
Vidiborsky, Morris	Dorchester	56 Pleasant Street.
Wainio, Walter	Maynard	North College.
Walker, John Olin	Merrimac	26 Fearing Street.
Warren, Thomas Larkin	Lawrence	Kappa Sigma.
Waterman, Asa	Rehoboth	29 North Prospect Street.
Whaley, William Gordon	East Moriches, N. Y.	North College.
Whitaker, Spofford	West Medford	

¹ Candidate for Degree of Bachelor of Vocational Agriculture.

Whitney, Marjorie Eleanor	Westminster	Abigail Adams House.
Wildner, Carl Richard	Amherst	97 Pleasant Street.
Williamson, Leslie Wegardh	Allston	North College.
Willis, Olivia Elizabeth	Monson	Abigail Adams House.
Winer, Mae	Three Rivers	Abigail Adams House.
Winsor, Sylvia Bancroft	New Bedford	Abigail Adams House.
Wisneski, Henry	Amherst	25 Belchertown Road.
Wolcott, Thomas Bernard	Westfield	15 Phillips Street.
Woodbury, Charles Samuel	Springfield	North College.
Zak, John Michael	Sunderland	Lincoln Avenue.
Ziomek, Apolonia Julia	Amherst	R. F. D. 3, Box 129.

SPECIAL STUDENT.		
Powell, Amy S. L.	Hadley	R. F. D. 1

STUDENTS REGISTERED AFTER CATALOGUE FOR 1931-32 WAS PUBLISHED.

CLASS OF 1932.		
Berggren, Stina M. O.		Worcester.
Clark, Mildred Cahoon		Springfield.
Evans, Richard Warren		North Attleboro.
Flood, George Millard		North Adams.
Lorrey, Robert Henry		Watertown.

CLASS OF 1933.		
Howe, Evan Carleton		Norfolk.
Mitchell, Robert Dawson		Holyoke.

CLASS OF 1934.		
Benson, Florence Louise		Worcester.
Daniels, Richard Horace		North Adams.
Mucklow, Francis Alfred		Windsor, Conn.
Walsh, Frank Joseph		Springfield.

SPECIAL.		
Erickson, Karl H.		Westport.
Ginsburgh, Rose K.		Holyoke.
Houlahan, Michael L.		North Agawam.

SUMMARY BY UNDERGRADUATE CLASSES.

Class.	Men.	Women.	Total.
1933	96	30	126
1934	126	43	169
1935	181	67	248
1936	225	84	309
Special	-	1	1
Total	628	225	853

GEOGRAPHICAL SUMMARY.

Massachusetts	817	New York	7
Maine	2	New Jersey	4
Vermont	4		
Rhode Island	1		
Connecticut	18		853

STOCKBRIDGE SCHOOL OF AGRICULTURE.

GRADUATES, 1932.

Thomas Lewis Abbott	Bellows Falls, Vt.
Lois Lumbert Babb	Mill River.
Robert Lee Baker	Middleboro.
Douglas Stanley Batchelor	Athol.
Laurent Victor Bernier	Northampton.
Harold Whitney Bishop	Springfield, Vt.
George Ival Booker	Corinna, Me.
James Myron Bowen	Erving.
Leo Ivan Bruce, Jr.	Holliston.
Urban Jay Charles	Frammingham.
Horace Herbert Clark	Springfield.
Gilbert James Cromie	Andover.
Katherine Orne Davis	Swampscott.
Norman Phillip Davis	Stoneham.
Theodore Harding dePrado	Crestwood, N. Y.
Omer Roy Descheneaux, Jr.	Lowell.
Frank Edwin Dyer	Stoughton.
John Harold Ek	Brockton.
Joseph Julius Faszczewski	Brockton.
Floyd Malcolm Galbraith	Greenfield.
Walter Edward Hanby	Brockton.
David Stephens Henry	Wallingford, Conn.
Miner Stebbins Howes	Cummington.
Emil Morris Jaeschke	Adams.

Lawrence Lee Jewett	Northampton.
Kenneth Edwin Keith	Bridgewater.
Harold Archer Kendall, Jr.	Rockland.
Francis Lawrence Keohan	Weymouth.
William Vernon Kibby	Pittsfield.
Kenneth Alden Kinnear	Gardner.
Paul Grosvenor Kneeland	Sterling.
Stephen David Kovar	Brookline.
Melvin James LaFrance	Northampton.
Charles Lyman Leland	East Bridgewater.
George Henry Lowrie, Jr.	New Bedford.
William Edward Macquinn	South Weymouth.
Arthur Edward Marsh	Berlin.
Robert Burnham Mason	Princeton.
Charles Henry Mayhew, Jr.	Middleboro.
Robert Johnson Mills	Belmont.
Stanley James Mistarka	Northampton.
Leslie Mears MacAdams	Chelsea.
Walter Edward McAvoys	Boston.
Kenneth Angus MacLeod	Ipswich.
Henry Herbert Neely	Madison, Conn.
Arthur Yngve Nelson	Brockton.
Sherman Murray Niles	Williamstown.
Nelson Fred Noren	Bridgeport, Conn.
Thomas Patrick O'Connor	Holyoke.
John Patrick O'Gara	South Hadley Falls.
Leon Everett Pearson	Lynnfield Centre.
William Nelson Perkins	East Bridgewater.
Walter William Planitzer	Lawrence.
Eldon Dexter Pond	Holliston.
Clyde Havens Putnam	Sutton.
John Waters Queen, Jr.	Boston.
Timothy Paul Rabbitt	Holyoke.
Floyd Greenwood Robinson	Cambridge.
Frank Tufts Robinson, Jr.	Cambridge.
Milton Josselyn Rogers	South Hanover.
Virginia Rollins	Jamaica Plain.
Joseph Carl Saalfrank, Jr.	Lawrence.
Andrew Theodore Sarris	Lowell.
John Francis Sheridan	Clinton.
Edgar Warren Skelton	Newton Highlands.
Gordon Elliot Slater	Lexington.
Hugh Chaplin Smith	Lawrence.
Manuel Paul Soares	Fairhaven.
Sherwood Carlton Stedman	Brockton.
James Anthony Sullivan	Holyoke.
Stuart Johnson Thurber	Brattleboro, Vt.
Leo Verner Toko	Fitchburg.
Robert Langdon Trott	Andover.
Marjorie Hazel Turner	Yarmouthport.
Bruno Kalervo Vuornos	Brighton.
Stanley Matthew Walsh	Longmeadow.
Daniel William Warren, Jr.	Brookline.
Reginald Sherman Washburn	Middleboro.
Gilbert Curtis Watts	Whitman.
Bradford Ernest Webb	Andover.
Henry Kurt Weidlich	Springfield.
Chester Clinton Wheeler	Amherst.
Howard Bertram White	Fitchburg.
Leonard Rogers Whitney	Pittsfield.
Arthur Lyman Wiley, Jr.	Wakefield.
Ormond Kameron Williams	Bridgeport, Conn.
Ralph Wyatt	Fairview, Penna.

GRADUATES AS OF THE CLASS OF 1931.

John Francis Cobb	Roslindale.
William Templeton Greene	Lowell.
John Wells Hare	Springfield.
Howard Marshall Hulbert	Holliston.
Donald Thomas Maroney	Uxbridge.
Harris Henry Purdy	Merrimac.
Francis George Reed	Portland, Me.
Clinton Andrew Shibles	Rockport, Me.
James Francis Twobig	Springfield.
William Kenneth Webb	Oakham.

CLASS OF 1934.

Adams, Malcolm Henry	Brockton	50 Sunset Avenue.
Alvin, Howard John	Lynn	9 Phillips Street.
Arenius, Edward Rudolph	Longmeadow	86 Pleasant Street.
Armitage, Paul Graham	Brockton	7 Nutting Avenue.
Aston, William Harding	Peabody	4 Cosby Avenue.
Barenbaum, Benjamin	Newark, N. J.	2 Allen Street.
Baron, Milton	Springfield	38 Cottage Street.
Behan, John Gerard	Woods Hole	4 Cosby Avenue.
Bell, Garland Graham	South Weymouth	15 Cottage Street.
Blackmer, Lawrence Howard	Hardwick	18 Cottage Street.
Boice, Leigh Van Tassel	North Egremont	5 Allen Street.
Boutelle, Adams Whitney	Townsend	35 Lincoln Avenue.
Boutwell, Earl Hall	Greenfield	Greenfield.
Brooks, David Wirching	West Granville	44 Triangle Avenue.

Part II.

Burrell, Jarvis Cushing	East Bridgewater	15 Cottage Street.
Canon, John Northrup	Tyringham	52 Lincoln Avenue.
Cannon, Arthur Loker	Marlboro	50 Sunset Avenue.
Cannon, Madeline May	Brockton	c/o Mrs. E. B. Hobart, North Amherst.
Carroll, Lawrence Wendell	Camden, Me.	5 East Pleasant Street.
Cavanaugh, George Fredrick	Norwell	160 Hillside Avenue.
Chapin, Faxon Dayton	Springfield	12 Kellogg Avenue.
Chase, Prescott Wilbour	Newport, R. I.	Poultry Plant.
Childs, Austin Sheldon	Worcester	30 Fearing Street.
Childs, John Harris	Deerfield	Deerfield.
Collins, William Miles	Worcester	10 McClellan Street.
Cosgriff, David William	Sheffield	12 Cottage Street.
Crimmings, Crandall Briggs	Medford	34 McClellan Street.
Crowley, Edward Francis	Revere	50 Sunset Avenue.
Dunham, Richard Joseph	Williamstown	17 Cottage Street.
Dolan, Charles Gerald	Worcester	25 Gray Street.
Dondero, Charles Robert	Amesbury	Eames Avenue, c/o Mrs. Warnock.
Drake, Howard Evans	Avon Lake, Ohio	16 Hallock Street.
Dunn, Morn Morada	Newport, R. I.	61 Lincoln Avenue.
Eldred, Stephen Austin	Weston	c/o Mrs. Harold Hobart, North Amherst.
Erlandson, Edward Clark, Jr.	Roslindale	13 Hallock Street.
Farrell, Milo Leonard	Lowell	Eames Avenue, c/o Mrs. Johnson.
Fernald, Rollin Jewett	Waltham	184 South Pleasant Street.
Figuerido, Joseph Freeman	Falmouth	4 Cosby Avenue.
Flanagan, Thomas Edward	Dorchester	41 Pleasant Street.
Fleury, James Anthony	Amherst	40 Grove Street.
Fogg, Harold Frank	Weymouth	15 Cottage Street.
Fox, Ralph Alfred	Dracut	12 Chestnut Street.
Fulton, Robert Smith	North Amherst	Sunderland Road.
Furze, Thomas Francis	Boston	15 Cottage Street.
Garland, Ralph Osmond	Malden	12 Chestnut Street.
George, Herbert Weston	Manchester, N. H.	108 Pleasant Street.
Gerliep, Frank Fred	Holyoke	3 McClellan Street.
Gianetti, Gianetto Francis	Franklin	24 Lessey Street.
Godin, Charles Alpheus	Springfield	10 Chestnut Street.
Goodfield, Chester Edward	Gilbertville	18 Cottage Street.
Gosciminski, Stephen	Indian Orchard	7 McClellan Street.
Grahn, Donald	Westminster	Baker Lane, c/o Mrs. Webb.
Grieves, Frank Clifton	Lexington	Lincoln Avenue, c/o Mrs. Moore.
Haartz, Charlotte Louise	Winchester	17 Northampton Road.
Haley, Richard Leonard	Groton	160 Hillside Avenue.
Hall, Robert Francis	Medford	18 Cottage Street.
Harvie, Everett Milton	Leominster	31 Fearing Street.
Hassell, Galen Hollis	Conway	10 Chestnut Street.
Haven, Kenneth Franklin	Providence, R. I.	31 Fearing Street.
Hawes, Lauren Winslow	Natick	81 Pleasant Street.
Henry, Roger Shepherd	Waltham	3 Hallock Street.
Hersey, Roger Leavitt	Hingham	Eames Avenue, c/o Mrs. Warnock.
Higgins, Rollo Linnell	Orleans	17 Kellogg Avenue.
Hilliard, Charles Robert	Berlin	16 North Prospect Street.
Holmes, Robert Stanford	Brockton	31 Fearing Street.
Hopkins, Randall Williams	Swansea	5 Allen Street.
Horton, Darius Weekes	Wellsfleet	Eames Avenue, c/o Mrs. Warnock.
Hubbard, Harold Russell	Sunderland	Sunderland.
Hutchison, John Daniel	Evanston, Ill.	83 Main Street.
Hoslin, Wolcott Turner	Webster	31 North Prospect Street.
Kelley, George Preston	Campello	Box 122, c/o Mrs. Stowell, North Amherst.
Kenyon, Sherwood Colby	Somerville	4 Hallock Street.
Kutepoff, Konstantin Ermolaev	Bronx, N. Y.	c/o Mrs. J. Newlon, North Amherst.
Machon, Edward Alexander	Rahway, N. J.	160 Hillside Avenue.
Mason, Donald Tennyson	Worthington	20 Munroe Street, North- ampton.
Moore, Langdon Seavey	Springfield	35 East Pleasant Street.
Mossman, Robert	Roslindale	35 East Pleasant Street.
Murray, Alisoun Tucker	Cambridge	221 Chestnut Street, Florence.
MacDonald, Donald	Malden	c/o Mrs. Harold Hobart, North Pleasant Street.
MacLeod, Hector Ross	Amherst	17 North East Street.
MacMullen, Edson Coe	Fitchburg	17 Cottage Street.
Norris, Joseph Leo	Salem	18 Cottage Street.
O'Connor, Thomas James	Malden	30 Cottage Street.
Palmer, John Weston	Center Lovell, Me.	101 Pleasant Street.
Patten, Rosamond Newton	Sterling	14 Nutting Avenue.
Pena, John	West Falmouth	101 Pleasant Street.
Pendergast, William Lawrence	Norwood	4 Hallock Street.
Pensivy, John Joseph	Stockbridge	56 Pleasant Street.
Pierce, Edwin Newcomb	Orleans	17 Kellogg Avenue.
Porter, Warren William	West Springfield	44 Triangle Street.
Prescott, Franklin Newell, Jr.	Concord	22 Dana Street.
Randall, Kenneth Kirtan	Weymouth	15 Cottage Street.
Reid, David Cameron	Belmont	Eames Avenue, c/o Mrs. Warnock.

Rice, Marshall Josselyn	Arlington	Box 122, c/o Mrs. Stowell, North Amherst.
Richardson, William Gardner	Melrose	c/o Mrs. Harold Hobart, North Amherst.
Roberts, Roger Eugene	South Hadley Falls	Cottage Street Extension, c/o Mrs. Johnson.
Rogosa, Morrison	Lynn	48 Pleasant Street.
Romano, Luigi Vincent	West Lebanon	17 Cottage Street.
Russell, Jarvis Nathan	Cuttingsville, Vt.	Triangle Street, c/o Mrs. Stanisiewski.
Ryder, Edwin Miller	Middleboro	30 Cottage Street.
Seacord, Roger Voland	New Rochelle, N. Y.	53 Lincoln Avenue.
Simmons, Chauncy Thornton	Amherst	Hadley Road.
Sinervo, Francis Reino	Gardner	42 Cottage Street.
Smith, Arthur Leland	West Worthington	20 Munroe Street, Northampton.
Smith, Robert Samuel	Westboro	7 East Pleasant Street.
Soden, Howard Clifton	Worcester	67 Lincoln Avenue.
Stuart, Thomas Wighton	Newton Center	Eames Avenue, c/o Mrs. Warnock.
Swan, Donald Pillsbury	Walpole	4 Hallock Street.
Sweeney, Robert Arthur	Springfield	35 East Pleasant Street.
Toney, Walter Edward	Waltham	184 South Pleasant Street.
Tropeano, Joseph Clarence	Lexington	Eames Avenue, c/o Mrs. Warnock.
Uhlman, Edward Lewis	Westboro	42 McClellan Street.
Vanderzee, James John	Whitinsville	Eames Avenue, c/o Mrs. Warnock.
Wales, Francis Goddard	Rutland	31 Lincoln Avenue.
Webber, Sherwood Webster	Springfield	17 Kellogg Avenue.
Wentzell, Thomas Raymond	Worcester	16 North Prospect Street.
White, Robert Ostrom	Pittsfield	9 Gray Street.
Whitenett, Raymond Leo	Montague	Montague.
Williams, Sherwin Lester	Rutland, Vt.	4 Hallock Street.
Winter, Eino Walter	Westminster	Baker Lane, c/o Mrs. Webb.
Wood, Russell Gifford	Westport	9 Phillips Street.
Woodcock, John Milton	Ripley, Me.	48 Pleasant Street.
Yandow, Lawrence George	Indian Orchard	Indian Orchard.
Zuretti, Joseph Luis	Lexington	5 East Pleasant Street.
CLASS OF 1933.		
Adams, Myra Louise	North Brookfield	22 Fearing Street.
Bodwell, Gareth Palmer	Sharon	13 Hallock Street.
Bonnemort, Charles Roscoe	Dedham	73 Pleasant Street, Kolony Klub.
Boudo, Henry James	Northampton	Northampton.
Brace, Albert George	Amherst	131 West Street.
Brandley, James William	Jamaica Plain	Baker Lane, c/o Mrs. Webb.
Briggs, Robert Ogden	Athol	Box 83, North Amherst.
Brousseau, Henry Alfred	Attleboro	17 Kellogg Avenue.
Brown, George Addison	Northampton	Northampton.
Burrell, Robert Howard	South Weymouth	108 Pleasant Street.
Burrige, George Cornelius	Longmeadow	45 Pleasant Street.
Calvert, Floyd Carlton	Athol	38 Cottage Street.
Carlson, Walter Walfrid	Harvard	8 South Prospect Street.
Castro, Anthony	Taunton	35 Amity Street.
Cook, Gordon Makepeace	Amherst	R. F. D. No. 1, Amherst.
Cooney, Joseph Francis, Jr.	Rockport	116 Pleasant Street.
Cottrell, Lewis Arthur	Middlefield	73 Pleasant Street, Kolony Klub.
Cross, Robert Francis, Jr.	Osterville	3 Nutting Avenue.
Crouse, John Southworth	Lawrence	17 Cottage Street.
Currier, Charles Amos	Meriden, Conn.	25 North Prospect Street.
Cutter, James Ross	Amesbury	Baker Lane, c/o Mrs. Dillingham.
Davis, Gwendolyn	Taunton	12 East Pleasant Street.
Dennen, Frederick Waite	Gloucester	75 Pleasant Street, A.T.G.
Desoe, Barbara Ella Paton	West Springfield	70 Lincoln Avenue.
Dolby, Warren Chase	Great Barrington	52 Lincoln Avenue.
Doskots, Stanley	Amherst	R. F. D., Box 176 Amherst.
Eastman, Albert Lowell	Falmouth	73 Pleasant Street, Kolony Klub.
Fenno, Gordon Hill	Westboro	42 McClellan Street.
Field, George Almer	Sheffield	9 Fearing Street.
Folan, John Francis	Pittsfield	7 McClellan Street.
Foulsham, Charles Kenneth	Berhlehem, Pa.	101 Pleasant Street.
Frank, Carl Alfred	Falmouth	75 Pleasant Street, A.T.G.
Gallagher, John Vincent, Jr.	Middleboro	25 Gray Street.
Gelineau, Raymond Flavien	Lawrence	c/o Mrs. Frank Dickinson, North Amherst.
Hagelberg, Edward Eino	Fitchburg	4 McClure Street.
Hahn, Frank Jacob	Holyoke	3 McClellan Street.
Hallaren, Arthur Edward	Lowell	c/o Mrs. Frank Dickinson, North Amherst.
Hamel, John Bernard	Worcester	73 Pleasant Street, Kolony Klub.
Haney, Joseph Paul	Medford	7 McClellan Street.
Hanson, Stephen Howard	Rowley	7 McClellan Street.
Harney, Ivan Richard, Jr.	Woodmont, Conn.	29 North Prospect Street.
Harris, Elbert Artman	Yonkers, N. Y.	160 Hillside Avenue.

astings, Chilton Mason	Lynnfield Centre	72 Lincoln Avenue.
ebert, Lisle Joseph	Northampton	Northampton.
ill, Alfred Norman	Ludlow	73 Pleasant Street, Kolony Klub.
ill, Bernard Thomas	Framingham	75 Pleasant Street, A.T.G.
ilton, Harry Edward	Walpole	4 Cosby Avenue.
okanson, Harold Raymond	Brockton	73 Pleasant Street, Kolony Klub.
unt, Harold Edward	Dalton	69 Main Street.
eger, Alfred Berthold	Newark, N. J.	4 McClure Street.
arkko, Leo Osmo	Fitchburg	4 McClure Street.
ennings, Howard Hall	North Easton	c/o Mrs. George L. Cooley, North Amherst.
Keegan, Stanley Kenneth	Shrewsbury	69 Main Street.
ilcoyne, James Harold	Clinton	c/o Mrs. F. S. Cooley, Sunderland.
lock, Clarence Randolph	Newburyport	4 McClure Street.
knowles, Albert Hadden	West Newbury	7 Phillips Street.
koistinen, Paul Olavi	North Stonington, Conn.	10 McClellan Street.
amson, Robert Douglas	Foxboro	86 Pleasant Street.
ibbey, Paul John	Worcester	35 Lincoln Avenue.
ivermore, Leland Bromley	Ludlow	75 Pleasant Street, A.T.G.
MacDonald, John Duncan	Bridgeport, Conn.	73 Pleasant Street, Kolony Klub.
ansfield, Richard Dexter	Wakefield	184 South Pleasant Street.
arston, Lawrence Wilson	Brockton	108 Pleasant Street.
artin, John Rose	Waquoit	75 Pleasant Street, A.T.G.
Merrill, Henry Wales	Randolph	73 Pleasant Street, Kolony Klub.
Mueller, George Theodore	Holyoke	3 McClellan Street.
MacLean, William James, Jr.	West Bridgewater	Eames Avenue, c/o Mrs. Warnock.
MacQuade, Joseph Walter	Osterville	17 Cottage Street.
Newton, Donald James	Montague	Montague.
Nyland, Harry Edward	Rockport	116 Pleasant Street.
Ohme, Chester Gordon	Princeton	73 Pleasant Street, Kolony Klub.
O'Neil, James Francis	Framingham	108 Pleasant Street.
earson, Harold James	Lowell	97 Pleasant Street.
erkins, Harry Sidney	Wollaston	19 Fearing Street.
roctor, Thornton Alfred	West Medway	Poultry Plant.
antoul, Albert Wood, Jr.	Cambridge	18 Nutting Avenue.
lder, Carol Adelaide	Burlingham, N. Y.	12 East Pleasant Street.
iley, Herbert Emery	Tyngsboro	4 Cosby Avenue.
oot, Edgar Whitney	Westfield	5 Nutting Avenue.
chmid, Frederick Daniel	Roslindale	13 Hallock Street.
choonmaker, Robert Selleck, Jr.	Amherst	35 East Pleasant Street.
ears, Charles Augustus Emery, Jr.	Dighton	17 Kellogg Avenue.
eehan, John Andrew	Dracut	116 Pleasant Street.
erwood, Warren Walker	Athol	Baker Lane, c/o Mrs. Dillingham.
hulander, Raymond Alfred	Chicago, Ill.	101 Pleasant Street.
bel, John Edward	Mt. Airy, Phila., Pa.	Eames Avenue, c/o Mrs. Warnock.
mmmons, Eric Whiting	Hingham Center	73 Pleasant Street, Kolony Klub.
mall, Frank Andersen	New Bedford	4 McClure Street.
nith, John	Dartmouth	75 Pleasant Street, A.T.G.
olding, George Howard	Guilford, Conn.	13 Hallock Street.
ear, Philip Augustine	Rockport, Me.	45 Pleasant Street.
earns, Perry Chamberlain, Jr.	Springfield	52 Lincoln Avenue.
eele, Arnold David	North Adams	4 McClure Street.
eele, Charles Henry	East Longmeadow	Eames Avenue, c/o Mrs. Warnock.
one, Herbert Edwin	Hopkinton	Baker Lane, c/o Mrs. Webb.
illivan, John Joseph	Cambridge	73 Pleasant Street, Kolony Klub.
anson, Milton Reed	Malden	67 Lincoln Avenue.
ompson, Lloyd Fabian	Brockton	2 Cosby Avenue.
eston, Robert Cushing	Dorchester	73 Pleasant Street, Kolony Klub.
owne, Leland Salem	Williamstown	8 South Prospect Street.
urner, John Methuen	Springfield	75 Pleasant Street, A.T.G.
unLeeuwen, John Kenneth	Worcester	35 Lincoln Avenue.
ugs, Manuel Mello	Lowell	4 Cosby Avenue.
akefield, Lester Harrington	Lunenburg	14 Kellogg Avenue.
akelee, Robert Charles	Brookline	East Pleasant Street, Ketchen's Garage.
ilder, Eleanor Mary	Brookline	24 North Prospect Street.
illiams, Dwight Keble	Poughkeepsie, N. Y.	Baker Lane, c/o Mrs. Webb.
illiams, Henry Phillips, Jr.	Grosse Pointe Farms, Mich.	75 Pleasant Street, A.T.G.
ilson, Robert G.	Waltham	184 South Pleasant Street.
ise, Robert Lawrence	Medford	34 McClellan Street.
oodard, George Newton	Worcester	73 Pleasant Street, Kolony Klub.
right, Donald Clarence	Wollaston	9 Gray Street.
yckoff, Edward Seddan	Bedminster, N. J.	75 Pleasant Street, A.T.G.
ung, Joseph Henry	Worcester	75 Pleasant Street, A.T.G.

Bowen, Frank Arnold	East Douglas	62 Pleasant Street.
Kyle, Thomas Joseph	Greenfield	76 Chapman Street, Greenfield.
Lowrie, George Henry, Jr. . . .	New Bedford	101 Pleasant Street.
Stevenson, Roscoe Henry	Springfield	15 Inwood Place, Springfield.

REGISTRATION. WINTER SCHOOL, 1932.

Adlerstein, Ida	Bronx, N. Y. C.
Allen, Adren G. . . .	Springfield.
Allen, Arthur E. . . .	East Providence, R. I.
Amerian, Kurken G. . . .	Watertown.
Anderson, Bernhardt A. . . .	Frammingham.
Bartlett, Ralph S. . . .	Springfield.
Bedard, Paul	New Bedford.
Boucher, David	Auburn, Me.
Brackett, Robert A. . . .	Wellesley Farms.
Bradley, Clinton K. . . .	Pelham Manor, N. Y.
Call, Gilbert M. . . .	Lawrence.
Cameron, Hugh A. . . .	East Providence, R. I.
Carberry, James F. . . .	Lake Bluff, Ill.
Carter, Charles C. . . .	Ottumwa, Iowa.
Chaffee, Jr., Arthur C. . . .	Rehoboth.
Charest, Raymond	Fall River.
Clark, Howard M. . . .	Lyonsville.
Copeland, Charles S. . . .	Arlington.
Costello, John H. . . .	Dorchester.
Coy, Edward N. . . .	Brockton.
Cromwell, Harold F. . . .	Orange.
Davis, Robert A. . . .	Dodge.
Dean, Wendell	Weston.
Delitto, Angelo A. . . .	Mamaroneck, N. Y.
Dourdeville, Theodore A. . . .	Brookline.
Dufresne, Jr., Wilfred	New Bedford.
Duris, Joseph	West Granville.
Eldridge, Hosmer B. . . .	Great Barrington.
Erb, W. Ludwig	Philpsburg, Penna.
Ferry, Arthur C. . . .	Springfield.
Galuszka, Lucy	Chicopee.
Hannigan, William E. . . .	Burlington, Vt.
Harding, Charles D. . . .	Edgartown.
Hare, J. Wells	Springfield.
Harper, Frederick J. . . .	East Braintree.
Haven, Margaret (Mrs.)	Bedford.
Haven, Richard W. . . .	Bedford.
Hendrickx, Charles H. . . .	Worcester.
Hopkins, George	Chepachet, R. I.
Horton, Sumner	Truro.
Howes, Edward C. . . .	Stoneham.
Hughes, Paul	Brighton.
Jensen, John T. . . .	Shrewsbury.
Killeen, John J. . . .	Great Barrington.
Kimball, Leon J. . . .	Plattsburg, N. Y.
Kuhn, Edward T. . . .	Watkins Glen, N. Y.
Leonard, Edgar D. . . .	Sutton.
Lesperance, Alfred	Wilmette, Ill.
Marsinsik, John P. . . .	Clinton.
Meagher, F. Edmund	Lenox.
Middleton, Gilbert	Pittsfield.
Mitchell, Robert L. . . .	Salem.
Mitchell, William F. . . .	Greenfield.
Montague, Fay B. . . .	Brighton.
Mooney, John J. . . .	New Bedford.
Moore, William	Brookline.
Moran, Herbert J. . . .	Windsor, Vt.
Murphy, Timothy J. . . .	Banff, Alberta, Canada.
McCullough, Casper	Providence, R. I.
McDonald, Joseph L. . . .	Quincy.
MacFarlane, Melvin	Beverly.
MacLean, Arthur W. . . .	Saratoga Springs, N. Y.
O'Connell, Timothy	Northampton.
Pearson, Welton G. . . .	Stoney Brook.
Peterson, Howard D. . . .	Webster.
Piasta, Francis D. S. . . .	Westboro.
Poskitt, Frank W. . . .	Belchertown.
Ramsay, Ernest	Waltham.
Recka, Joseph W. . . .	Pawtucket, R. I.
Rinaldi, Tulio E. . . .	Passaic, N. J.
Scott, Meyer	Rockport, Me.
Shibles, Clinton A. . . .	New Ipswich, N. H.
Siren, John A. . . .	Berlin.
Small, Myron R. . . .	Griswoldville.
Smith, Herbert	Farmington, Conn.
Smith, Max	Berlin.
Smith, Oliver E. . . .	Westboro.
Smith, Robert S. . . .	North Attleboro.
Sullivan, William F. . . .	Easthampton.
Tautznik, Peter	

Part II.

Theodoros, Stel	Lowell.
Thompson, Oliver W.	Unionville, Conn.
Todd, Earl M.	Northampton.
Foole, Henry J.	Amherst.
Furri, John	Bridgeport, Conn.
Fwohig, James	Springfield.
Fwohig, William P.	Springfield.
Walker, Everett M.	Westboro.
Westfall, Samuel C.	Hartford, Conn.
Wheeler, Henry E.	Springfield.
White, John D.	Litchfield, Conn.
Wilcox, Howard E.	Manchester, Vt.
Zawacki, Alexander J.	Easthampton.

SUMMARY OF SHORT COURSE ENROLLMENT.

	Men.	Women.	Total.
Stockbridge School of Agriculture:			
Second year	109	5	114
First year	119	5	124
Winter School, 1932	90	3	93
Specials	4	—	4
Totals	322	13	335

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Gifts and Bequests.

For the information of those who wish to make a gift or a bequest to this College, the following suggestion is made as to the form which may be used.

"I give (and bequeath) to the Trustees of the Massachusetts State College at Amherst, Massachusetts, the sum of dollars.

Signed"

THE M. S. C. BULLETIN

AMHERST, MASSACHUSETTS

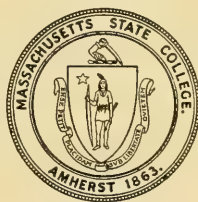
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REPORT NUMBER



MASSACHUSETTS STATE COLLEGE

THIS ISSUE OF THE BULLETIN CONTAINS THE
REPORT OF THE PRESIDENT AND OFFICERS
OF ADMINISTRATION FOR THE YEAR ENDING
NOVEMBER 30, 1932, WHICH IS A PART OF
THE SEVENTIETH ANNUAL REPORT OF THE
MASSACHUSETTS STATE COLLEGE AND AS
SUCH IS PART I OF PUBLIC DOCUMENT 31.
(SECTION 8, CHAPTER 75 OF THE GENERAL
LAWS OF MASSACHUSETTS)

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Note: The report of the Director of the Experiment Station is published as separate bulletin.

MASSACHUSETTS STATE COLLEGE

REPORT OF THE COLLEGE ADMINISTRATION TO THE BOARD OF TRUSTEES, 1932

This seventieth annual report is made in the period between two administration at the College. It is, therefore, primarily a report of the events of the year and while it omits the customary discussion of the problems facing the administration it should not be implied that there are none. Despite the interruption of a change in administration the work of the College has gone steadily forward and the accomplishments of the year have been significant. An unusually large number of meetings of the Board of Trustees and Trustee Committees have been necessary during the year and the active interest of the members and their faithfulness to the added responsibilities of their office have been of primary importance in the successful administration of the affairs of the College.

Resignation of President Thatcher

Dr. Roscoe W. Thatcher resigned as the tenth president of the College on August 31, 1932, after five years of distinguished service in the executive chair. His resignation was made necessary because of ill health which, according to physician's advice, was aggravated by the responsibilities of administration. There was also his eager desire to return to his professional field of chemical research. He presented his resignation to the Board of Trustees at a special meeting on April 8, 1932, and it was accepted with deepest regret. At that time the Board of Trustees invited Dr. Thatcher to accept a research professorship in the Experiment Station whenever the recovery of his health would enable him to do so.

Among the many accomplishments of President Thatcher's administration perhaps the most significant have been the completion of the Physical Education Building, the naming of the Stockbridge School of Agriculture and the changing of the name of the College. There have been other important achievements, however not the least of which has been the increasing understanding and appreciation with which the College has come to be held by the citizens of the Commonwealth. This has led to an increased demand for service which has meant, among other things a growth in student enrollment of fifty-one per cent during the past five years.

The New President

Dr. Hugh Potter Baker was elected to become the eleventh president of the College at a special meeting of the Board of Trustees held on October 6, 1932. His action was taken upon the recommendation of a special committee of seven trustees under the Chairmanship of Vice-President Ellis and followed a painstaking search by that committee for the right man for this important office. Dr. Baker leaves the position of Dean of the New York State College of Forestry at Syracuse University to come to Massachusetts. His experience there and his varied and successful experience in the fields of education and business qualify him exceptionally well for the presidency of this State College. He is a graduate of Michigan State College with the Bachelor of Science degree and holds the degrees, Master of Forestry from Yale University, and Doctor of Economics from the University of Munich, Germany.

Because of the responsibilities of his office in New York State he will not be able to take office here until February 1, 1933. When he does come, I am sure he will be warmly welcomed and conscientiously served by the faculty of our College.

Administration Ad Interim

For the period between the administrations of President Thatcher and President Baker, September 1, 1932, to February 1, 1933, the Trustees appointed a committee of the faculty to administer the affairs of the College. This committee is composed of the Dean of the College, William L. Machmer; the Treasurer, Fred C. Kenney; the Director of the Graduate School and the Experiment Station, Fred J. Sievers; the Director of the Extension Service, Willard A. Munson; the Director of Short Courses, Roland H. Verbeck; and the Secretary of the College, Robert D. Hawley, Chairman.

Trustee Changes

The resignation of Miss Sarah Louise Arnold as Trustee of the College was announced at the meeting of the Board on September 7 and was received with very deep regret. Her position was later filled by the Governor's appointment of Mrs. Joseph S. Leach of Walpole.

Mr. David J. Malcolm of Charlemont was appointed Trustee at the beginning of the year to succeed Mr. Carlton D. Richardson whose term had expired. Mr. Richardson had served as a member of the Board for fourteen years.

Dr. William Wheeler

The Trustees and faculty were greatly grieved to learn of the death of Dr. William Wheeler on July 1, 1932. Dr. Wheeler was a distinguished graduate in the first class of the College, 1871, and had made a notable record as educator, administrator and particularly as hydro-electric engineer. He served for forty-four years as a trustee of this College and for some time as Vice-President and Chairman of the Board. In 1929 the College conferred upon him the honorary degree, Doctor of Laws.

Staff Changes

There have been five resignations from the professional staff during the year in the grades of assistant professor and instructor. Four of these positions have been filled and one is still vacant. Dr. Harry R. DeSilva was appointed to be Professor of Psychology in the only new position permitted by the provisions of the budget.

Professor F. A. Waugh resigned from the position of Head of the Division of Horticulture after twenty-five years in that office during which time he organized and developed the Division to its present status. He relinquished these duties in order that he might devote his entire time and attention to the work of the Department of Landscape Architecture of which he is Head. Professor R. A. VanMeter was appointed to succeed him as Head of the Division.

While the retirement of Dr. J. B. Lindsey did not come during the period covered by this report, it came so shortly thereafter and is of such timely interest that mention of it here seems warranted. Dr. Lindsey held the positions of Goessmann Professor of Chemistry, Research Chemist and Vice-Director of the Experiment

Station. He is an alumnus of the College of the Class of 1883 and a national known scientist. He has rendered distinguished service at this College for forty-two years and his retirement on December 26, 1932, at the age of seventy, marks the close of a period of service rarely equalled. On the evening of December 3, the members of the faculty gathered at Memorial Hall to do him honor. Professor C. J. Gordon, Head of the Division of Science, was in charge of the meeting at which appropriate remarks were made by Professor F. J. Sievers, Director of the Experiment Station; Hon. George H. Ellis, Vice-President of the Board of Trustees; and Dr. H. J. Wheeler, classmate of Dr. Lindsey and himself a distinguished scientist.

Student Enrollment

The problems raised by increased student enrollment, described in last year's report, have continued or grown in seriousness. Last year for the first time the enrollment of women students was limited because of lack of housing facilities and some seventy applicants were refused consideration. This year the Trustees fixed a limit for enrollment in the freshman class at three hundred students of which no more than seventy-five might be women. As a result of this limitation, approximately one hundred students were refused admission. Even so, enrollment of students in the undergraduate course increased this year approximately twelve per cent as compared with last year's enrollment and as a result facilities for housing, class rooms, and teaching staff are pressed to the limit.

The list of students enrolled in the fall of 1932 indicates 851 in the four-year course as compared with 760 last year; 127 in the Graduate School as compared with 105 last year; and 243 in the Stockbridge School as compared with 274 last year. This decreased enrollment in the Stockbridge School at a time when enrollment in other courses in the College is increasing so rapidly is an interesting phase of the situation. Probably the explanation is that the general economic situation has affected first this group of students and lack of funds has prevented normal matriculation. This same situation has, undoubtedly, obtained in the four-year course, but the places of those who have been unable to come because of financial stringency have been filled by students who in normal times might go to college where the cost would be greater.

The total enrollment of students in the fall term amounted to 1,221 as compared with 1,139 a year ago, an increase of 7.2 per cent.

GROWTH OF STUDENT ENROLLMENT

	1927-1932					
	1927	1928	1929	1930	1931	1932
4-Year Course						
Men	440	467	454	482	565	621
Women	120	134	138	163	195	221
Total	560	601	592	645	760	842
Graduate School						
Men	34	38	41	56	87	95
Women	6	8	7	9	21	26
Total	40	46	48	65	108	121
Stockbridge School						
Men	190	228	207	225	261	238
Women	16	14	15	15	12	1
Total	206	242	222	240	273	239
Total men	664	733	702	763	913	955
Total women	142	156	160	187	228	267
Total all students	806	889	862	950	1,141	1,222

Northeast Forest Experiment Station

It was with deep regret that we saw the Northeast Forest Experiment Station of the Federal Government move this year from our campus to Yale University. The growth of the Station required facilities beyond our ability to supply them and here seemed to be no alternative for them than to go where their needs could be adequately met. Then too, the failure of our own building program in the face of rapidly increasing student enrollment made it more difficult for us to spare the space which they already occupied. Efforts were made to secure the erection of a Federal building on the campus to house the Station but these were unsuccessful. During the nine years which the Station was here it contributed much to the scientific spirit of our campus and to the actual research and teaching program of the College.

Economy Program

The State appropriation for maintenance for the year just closed was decreased \$51,572 under the appropriation for the preceding year while at the same time we had an increase in student enrollment of twenty per cent. This situation required the exercise of strict economy in all our operations. To this end the faculty cooperated loyally with the administration so that we were able to close the year with all obligations met and a balance of \$13,014.

In order to accomplish this saving certain important reductions in service were made. Student enrollment was limited; Summer School was discontinued; professional improvement travel was omitted and all travel reduced to a minimum; the monthly publication, *State College Review*, was discontinued; arrangements for special lecturers were curtailed and in a variety of other ways our normal procedure was modified in order to save expense. While this contraction has been possible as a temporary emergency measure its continuance for any extended period would undoubtedly prove seriously harmful and for the sake of the cause of higher education in Massachusetts we hope it will not be necessary.

Student Health Service

The second year of the student health service has further demonstrated its value as described in last year's report. No epidemics occurred during the year and Dr. Ladcliffe, in charge of the service, reports that student health has been generally good.

This health service is supported by a student fee which is assessed each student at the rate of \$4.50 per year.

Unemployment Relief Project

Three hundred sixty-two employees of the institution of all ranks contributed \$2,635.46 to a fund for unemployment relief in 1932. This project was undertaken wholly upon the initiative of the members of the staff and a committee of five of their number solicited and dispensed the funds. This committee was composed of representatives of the various groups of employees as follows: Professor L. A. Bradley, instruction staff; Mr. E. F. Gaskill, experiment station staff; Mr. E. S. Carpenter, extension service staff; Miss Ora E. Rouleau, clerical staff; and Mr. Eugene McNeill, labor staff. The efficient and effective way in which the committee carried out this project has been highly commended. Except for the purchase of seven Christmas baskets for former employees of the College, all payments were made in return for labor at the rate of three dollars for a nine hour day. Thirty-three men were employed at Amherst and \$400 was paid for labor at East Longmeadow as a contribution to the relief program of that town. Only those persons were hired who were recommended by the local welfare committees. Nine different improvement projects on the campus and in the town of Amherst were completed or assisted by the committee. Among these were the construction of a 1,200-foot gravel walk from the East Experiment Station Building to the Physics Laboratory, the tile draining of the south athletic field and the clearing out and straightening of the drainage brook east of the athletic field for a distance of about 800 feet.

This program served its object of relief for the needy in a most effective way in that persons helped could rightly feel that they gave full service in return for the assistance. At the same time improvements of value were accomplished for the College and the community.

Alumni Report on Housing

The need for increased housing facilities for students was emphasized in last year's report. The Alumni of the College interested themselves in this matter early in the year and appointed a special committee to make a survey and to report to the Executive Committee of the Association. This Alumni Committee made a very careful study of the situation, particularly as it applies to men students, and I am glad to append their statement of findings and conclusions to this report.

The conclusions of the Trustees regarding the need for additional dormitory accommodations are firmly supported by this alumni report and their petition to the legislature of 1933 for funds to provide for the construction of such dormitories on a self-liquidating basis should command added consideration as a result of this study.

Washington Bicentennial

The College participated in the nation-wide celebration of the George Washington Bicentennial by conducting special exercises which were well planned and supervised by a committee of the faculty composed of Professor C. H. Patterson, Dean W. L. Machmer, Director F. J. Sievers, Professor A. A. Mackimmie, Associate Professor W. E. Prince and Assistant Professor Lorian P. Jefferson. These exercises included a student contest in original oratory which was won by Leonard A. Salt of the Class of 1932 and a program appropriate to the planting of two elm trees at the south entrance to the campus at which the principal address was delivered by Professor Prince.

United Religious Work

There has been some direction for religious interest on the campus for many years. As early as 1913 there was a Y. M. C. A. Secretary in the person of Mr. Elg Sherk who gave full time to this work. At that time the financial support came from student taxes and private contributions. Mr. Sherk was succeeded in 1918 by Mr. Cecil G. Fielder and the work was continued largely on the same financial basis except that President Butterfield secured rather substantial contributions from several prominent alumni.

Following Mr. Fielder's resignation in 1920, President Butterfield secured the promise of four denominational church boards to lend financial support for the work on the basis of a united religious program. Therefore, in 1922, the Rev. John L. Hanna was appointed as Student Pastor and the financial support for the work was largely provided by these church boards: Congregational, Baptist, Unitarian and Methodist. Private subscriptions and student tax funds in addition amply provided for an active, comprehensive program. Mr. Hanna served with distinction for four years and was succeeded by Mr. Elmer E. Barber, an alumnus of the College, who served for two years. In 1928, Mr. Barber was succeeded by the Rev. J. Paul Williams.

It is the main purpose of this report to summarize briefly the results of this four years of work under Mr. Williams' leadership and to point out the present status of the project.

When Mr. Williams took office in 1928 the work was being supported by five religious groups: Congregationalists, Baptists, Universalists, Presbyterians and Episcopalians. The Unitarians and Methodists had recently discontinued their support. The Presbyterians and Episcopalians contributed for only one year and the Universalists discontinued their support in 1931. The major support for the work thus comes now from the Congregationalists and Baptists. In all of the cases of discontinuance the pressure of financial economy, so far as we know, has been the sole reason for the withdrawal of this support. The churches have been in hearty accord with the program on the basis that it provided some religious guidance for those of their members who were students in the College and away from the influence of their home churches. While financial support for the work

from private subscriptions and student taxes has continued as before, this loss of support from some of the church boards has reduced the funds available to such an extent that budgeting the program has become a very difficult problem.

In spirit, the United Religious Work is still as nonsectarian as it was five years ago. Indeed, the Director of Religious Education, who directs the program of United Religious Work, considers that his work lies as much with Catholics and Jews as with Protestants. He cooperates closely with the Catholic student organizations. Two Rabbis come periodically to the campus to assist in the program for the Jewish students.

In the spring of 1929 a course in the History of Religions was put into the curriculum. Two and three years later, respectively, courses in The Problems of Religion and The Literature of the Bible were included in the curriculum. These have been three hour courses open to juniors and seniors. The average elections have been twenty-six.

Since 1931 a student conference on some current topic has been conducted each year under the auspices of this Department. The first one dealt with Jewish, Catholic, Protestant Relations. A year ago Disarmament was considered. A symposium on "My Philosophy of Life" is projected for the current year. This symposium will be participated in by the faculty and students of the College.

On November 20-22, 1932, the Rev. Bernard Clausen, pastor of the First Baptist Church of Syracuse, New York, conducted a series of meetings which were very successful in arousing student interest in religion. It is planned to invite a Catholic to conduct a similar series next fall. In the fall of 1934 we hope to have Dean Charles L. Gilkey of the University of Chicago conduct a similar series. A large number of religious activities have centered around the student religious organizations: The W. C. A.; The Christian Association; The Newman Club; and The Menorah Society.

In all of this work the Director of Religious Education takes the lead in an effort to encourage religious thought among our students and to offer them the steadying influence of religion amidst what is sometimes a confusion of scientific and sociological theories.

Honorary Degrees

Three distinguished alumni were honored at Commencement when there was conferred upon them by the authority of the Board of Trustees honorary doctorate degrees.

Dr. William Penn Brooks of the Class of 1875, Professor Emeritus of Agriculture at this College and a noted agricultural scientist and educator, was awarded the degree, Doctor of Agriculture, honoris causa.

Mr. John Emory Wilder of the Class of 1882, the fifty-year reunion class, was awarded the degree, Doctor of Laws, honoris causa. Mr. Wilder was a prominent citizen of Chicago where he had been a successful business man and a leader in many civic and philanthropic enterprises for many years. His untimely death later this year was a grievous loss to the College and to his many friends here and elsewhere.

Dr. Daniel Willard, former student of the College also in the fifty year class of 1882, outstanding railroad executive and national leader in civic affairs, was awarded the degree, Doctor of Laws, honoris causa.

Again the College has honored itself in recognizing the distinguished services of one of its alumni.

ROBERT D. HAWLEY,
Chairman, Administrative Committee.

BUDGET FOR 1933

Again recognizing the need for economy the administrative officers of the College and the Trustees reduced budget estimates for 1933 to figures as low as seemed justifiable. These estimates include no increases over the reduced budget of 1932 except in the one item of college instruction where the pressure from largely increased student enrollment seems to require additional funds. This budget will require the continuation of those contractions in service initiated in 1932 and described elsewhere in this report.

General Maintenance

	1933 Personal Service	1933 Maintenance Expenses	1933 Total Request	1932 Appropriation
General College	\$448,895	\$97,270	\$546,165	\$537,500
Experiment Station	89,500	16,700	106,200	106,200
Extension Service	67,000	36,500	103,500	103,500
Waltham Field Station	4,300	6,600	10,900	10,900
Short Courses	61,300	10,000	71,300	71,300
Heat, Light and Power	—	42,000	42,000	42,000
Physical Plant Expenses	23,000	22,000	45,000	45,000
Fertilizer Control Law	11,500	3,100	14,600	14,600
Poultry Disease Law	24,000	12,000	36,000	37,500
Milk Testing Law	600	450	1,050	1,050
Feeding Stuffs Law	8,700	1,600	10,300	10,300
Seed Control Law	4,100	1,400	5,500	5,500
Laboratory Service	4,980	720	5,700	5,700
Trustee Expenses	—	1,200	1,200	1,200
Printing Reports	—	1,300	1,300	1,300
Totals	\$747,875	\$252,840	\$1,000,715	\$993,550

Permanent Improvements

The Trustees greatly restricted their request for funds for permanent improvements because of their understanding that few appropriations would be made for capital investment this year. They have asked for funds for the erection of dormitories because these are self-liquidating projects. Their requests also include certain urgent projects for repairs and improvements.

Request for Special Appropriations, 1933

1. **DORMITORY FOR MEN, \$160,000.** The housing of students has long been a serious problem because the crowded conditions which exist make it necessary for some students to live long distances from the campus and some times under unsatisfactory conditions of sanitary and social environment.

The College has adopted the sound policy of providing rooms in campus dormitories for all freshman students so far as accommodations are available. Present dormitories accommodate approximately one hundred men students. The facilities which would be provided by the construction of the building herein requested would care for another one hundred fifty students. This in turn would relieve the pressure for rooms off campus and thereby make it possible for other students to secure more satisfactory housing accommodations.

The fact that such a building would return an income sufficient to provide for amortization of the principal and also a reasonable return on the investment makes it worthy, it seems, of favorable consideration at this time.

2. **DORMITORY FOR WOMEN STUDENTS, \$195,000.** The need for a dormitory for women students is explained by the same reasons as stated above. One hundred fifty women students are this year living in private houses away from the campus. The building herein requested would provide accommodations for one hundred fifty women students together with dining hall facilities. This too is planned as a self-sustaining and self-liquidating enterprise.

3. **EXTENSION OF WATER MAINS FOR FIRE PROTECTION, \$10,000.** The water mains supplying the campus are too small to provide adequate fire protection. The engineer of the State Department of Public Health has studied the situation and recommends that an eight-inch main be installed for the entire campus. Part of this work was done in 1932 and the amount requested herein is to complete the project.

4. **REPAIRS AND IMPROVEMENTS TO STEAM LINE, \$50,000.** The original steam line is thirty years old and in need of replacement in many places. This plan has for its object the replacement of approximately 9,000 feet of our present mains. Our main lines are in very poor condition and it is imperative that this work be done soon as possible. The College authorities feel they cannot be held responsible if serious trouble emanates from this source.

5. ROAD REPAIRS, \$8,500. Some of the main campus roads need to be macadamized to withstand the heavy use which they get. One of the important main roads was partly rebuilt in 1929 and it is now proposed to continue this construction to the main highway at the north entrance to the campus, together with main connecting roads, a total distance of 1,895 feet.

6. DRILL HALL FLOOR RECONSTRUCTION, \$3,000. The under floor has rotted away so that the finish floor is loose. The present condition is dangerous and should be remedied immediately.

7. EMERGENCY FUND, \$5,000.

Survey of Student Housing by Special Committee of the Associate Alumni of Massachusetts State College, Fall of 1932

Distribution of facilities.

1. Housing accommodations regularly supplied by the College.

A. Dormitories: South College (boys)	40
North College (boys)	73
Adams Hall (girls)	102
Draper Hall (girls)	12
Homestead (girls)	6

Total boys	113
Total girls	120
Total all	233

B. Other college buildings: The College provides rooms in various other college buildings in return for janitor service and other considerations. These rooms are all occupied by boys.

Stockbridge Hall	4
East Experiment Station	3
French Hall	3
West Experiment Station	2
Apiary	2
M. S. C. Bungalow	1
M. S. C. Farmhouse	1
Mathematics Building	2
Hatch Experiment Barns	1

Total	19
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2. With the exception of those students who live at home and commute to classes all other four-year students live in private homes in Amherst, in rooming houses, or in hotels and inns.

3. Students commute from the following towns around Amherst. The number immediately following each town indicates the number from that town.

Town	Boys	Girls	Total
Amherst (Students living at home in Amherst)	18	10	28
Belchertown	2	2	4
Conway	—	1	1
Easthampton	4	—	4
East Longmeadow	1	—	1
Greenfield	1	2	3
Hadley	1	3	4
Hatfield	1	—	1
Holyoke	3	8	11
Leverett	1	1	2
Ludlow	—	1	1
Montague	2	—	2
Mount Tom	—	1	1
North Agawam	—	3	3
Northampton	16	—	16
Pelham	1	—	1

Town	Boys	Girls	Total
Shutesbury	—	1	1
South Deerfield	—	3	3
South Hadley	3	1	4
South Hadley Falls	1	1	2
Springfield	3	1	4
Sunderland	2	—	2
Turners Falls	1	2	3
West Pelham	1	—	1
Williamsburg	1	—	1

Totals	63	42	105
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4. Men students maintain 10 fraternity houses which house students as follows:

Q. T. V.	16
Phi Sigma Kappa	18
Kappa Sigma	27
Theta Chi	23
Sigma Phi Epsilon	20
Lambda Chi Alpha	24
Alpha Sigma Phi	14
Alpha Gamma Rho	15
Kappa Epsilon	12
Delta Phi Alpha	12

Total	181
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5. Other students, with two exceptions, room in private houses in Amherst.

A statement of numbers:

Boys	228
Girls	65

Total	293
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6. Two students maintain themselves in a small shack in Angus pasture on the college farm. Water is obtained from a pump and the toilet is primitive. The occupants use the dormitories' showerbaths.

7. A resume of housing accommodations for four-year students follows:

	Boys	Girls	Total
Dormitories	113	120	233
Other college buildings	19	—	19
Commuters	63	42	105
Fraternities	181	—	181
Private houses	228	65	293

Totals	604	227	831
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II. Rental Charges.

Prevailing weekly rents for rooms in private houses are as follows (these figures are abstracted from a report made by Dr. Radcliffe, College Health Officer, in the fall and spring of 1931-1932).

Rooms have been classified by Dr. Radcliffe as a combination of letters and figures as follows: A—very desirable; B—satisfactory; C—very plain; D—unsatisfactory: 1—scrupulously clean; 2—satisfactorily clean; 3—very ordinary; 4—unsatisfactorily clean. Rent averages in the groups are as follows.

	Number of cases		Average for	
	Single	Double	Single room	Double Room
A1 and A2	22	15	\$4.30	\$3.53
B1	17	20	4.06	3.07
B2	8	10	3.20	2.85
C1, C2 and C3	5	10	2.90	2.60

Grand average weekly rental: single room, \$3.90
double room, \$2.94

III. Stockbridge Students.

The congestion caused by the pressure of four-year boys in trying to secure rooms as near as possible to the campus reacts unfavorably upon the rooming possibilities for the two-year students who appear on the scene later in the fall. Thus, the two-year students, after filling the remaining available and often second-rate rooms near the campus, are forced to secure rooms at a still greater distance from the campus. Only 17% of the two-year students are able to find rooms within $\frac{1}{2}$ mile of the campus, while 61% room between $\frac{1}{2}$ mile and a mile from campus and 22% live over a mile from campus. This distribution is in striking contrast to the room distribution of the four-year students who are earlier on the scene. A dormitory for boys would release rooms for two-year students so that they might room nearer campus. At a conservative estimate, figuring two trips a day to the room, the student who lives over a mile from campus loses nearly an hour a day in transit alone.

IV. Distances from Campus.

A table of distances of rooming accommodations from the college campus further illustrates the effect of the competition between students for suitable rooms. The following tables present the percentage of students in various groups who room at various distances from the campus.

I — students living within $\frac{1}{2}$ mile of campus.

II — students living more than $\frac{1}{2}$ mile and less than a mile from campus.

III — students living more than 1 mile and less than $1\frac{1}{2}$ miles from campus.

IV — students living more than $1\frac{1}{2}$ miles and less than 2 miles from campus.

V — students living more than 2 miles from campus.

	I (0- $\frac{1}{2}$)	II ($\frac{1}{2}$ -1)	III (1- $1\frac{1}{2}$)	IV ($1\frac{1}{2}$ -2)	V (2+)
4-year students	35%	57%	5%	2%	1%
4-year boys only	35%	59%	4%	1%	1%
4-year girls only	36%	50%	7%	7%	0%
2-year students	17%	61%	19%	2%	1%

(The above 4-year groups included students living in private houses only.)

(In the following tables all students are included. All dormitories and most fraternities are within the $\frac{1}{2}$ mile radius of the College.) Note: The 2-year figures are repeated for purposes of comparison.

4-year students	62%	35%	2%	1%	+
4-year boys only	56%	42%	2%	+	+
4-year girls only	79%	16%	2%	2%	+
2-year students	17%	61%	19%	2%	1%

V. Description of Actual Cases.

In this section are described several cases illustrating conditions as they exist at present.

1. In this house, a triple decker, live three families, all of which take student roomers. Each floor is reached by an enclosed stairway at either end of the connecting halls of each tenement. There is no provision for isolating stairways in case of fire. On each floor there is a single toilet, tub, one room on each floor being devoted to these facilities.

A. First floor: 4 4-year students and 1 2-year student are roomers. The family on this floor consists of father, mother, and five small children: total population of floor — 12.

B. Second floor: 6 4-year students. The family on this floor consist of father, mother, and small baby: Total — 9.

C. Third floor: 5 4-year students. The family on this floor consists of man and wife only. Total — 7.

Total population of tenement — 28.

2. In this house, not a new building in any respect, the dining room is converted into sleeping room for students. The dwelling, of average size, is modeled, perhaps, for a family of five adults. In this house are rooming 15 students. In addition to students is a family of four. Total — 19.

3. In this house, which also is used as a boarding house by some 25 or more students, room 9 students. There is a single bathroom on the second floor which is necessarily common to all. There are three persons in the family. Total in this house — 12. Students room two and three in a room.
4. In a building, operated as a student boarding house, there are 7 students and three members of the family. Toilet facilities are inadequate for the 10 one toilet being available.
5. This house, although clean and pleasant, accommodates 13 students and two members of the family, a number which results in crowded conditions.

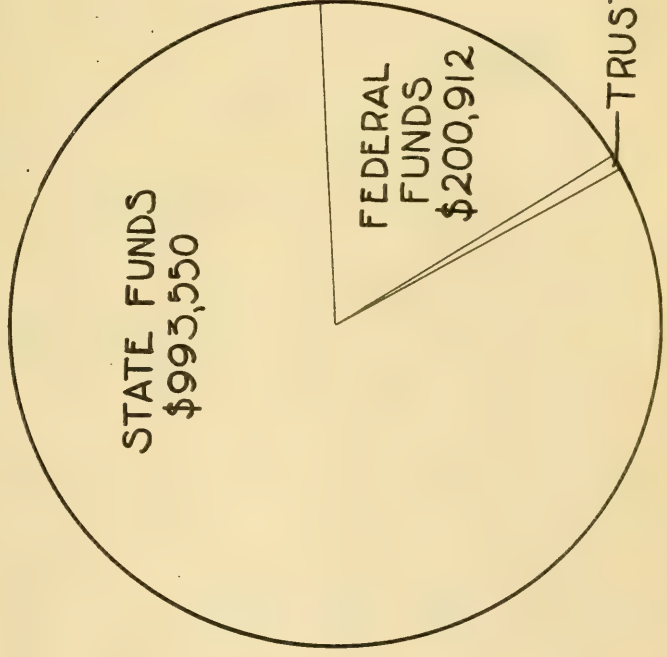
CONCLUSIONS

1. Dormitories which accommodate only 22% of the men students and 53% of the women students are inadequate, particularly at this College which is located in a small town with very limited facilities for housing those students who cannot be accommodated upon the campus.
2. The limited supply of off-campus rooms tends to increase the cost of rental beyond their value.
3. These limited rooming facilities make it necessary for some students to live long distances from the campus and for some to live under very unsatisfactory conditions of sanitary and social environment.
4. The erection of dormitories would make it possible for students to live nearer to the College and avoid the inconvenience and waste of time now imposed upon those who live at long distances from the College. It would make it possible also to avoid the congestion of students in unsatisfactory rooming houses and would tend to prevent excessive rental costs to students.

GRAPHIC REPORT

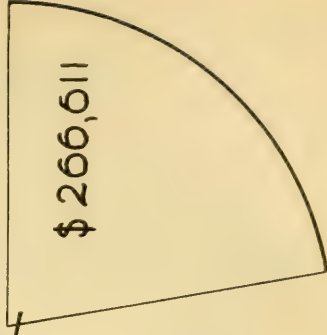
The following eight charts are intended to present in graphic form some of the important characteristics in the present administration of the College.

MASSACHUSETTS STATE COLLEGE SOURCE OF FUNDS — 1932

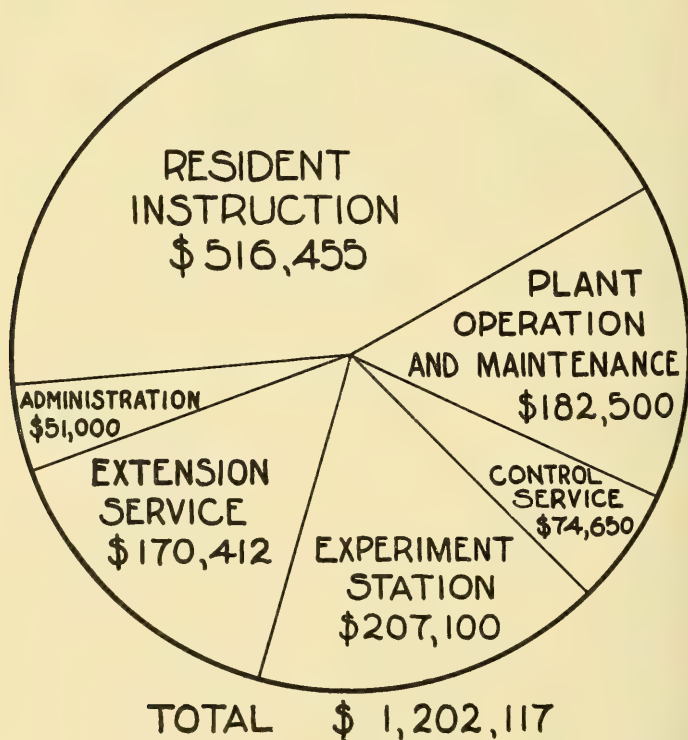


TOTAL RECEIPTS FOR
MAINTENANCE \$1,202,117

RECEIPTS FROM TUITION
AND SALES RETURNED TO STATE
TREASURER —

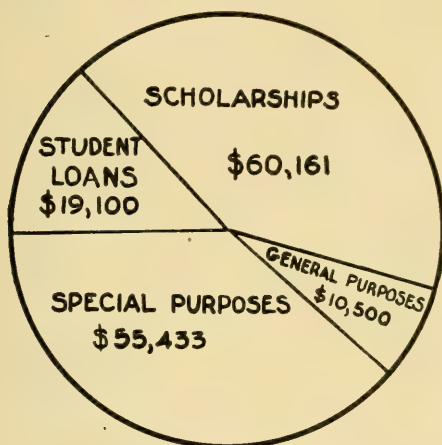


MASSACHUSETTS STATE COLLEGE USE OF FUNDS - 1932



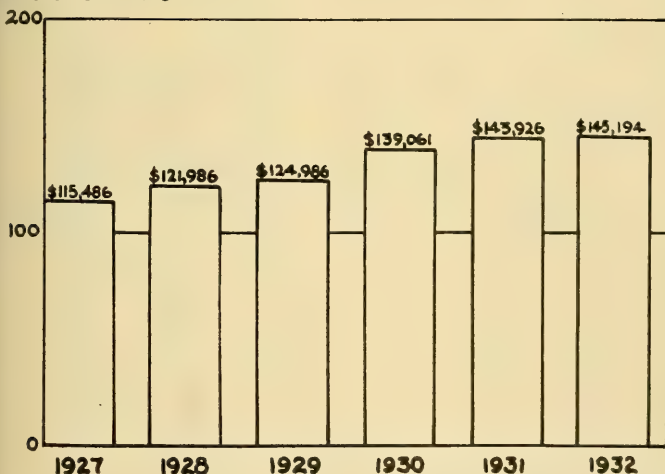
MASSACHUSETTS STATE COLLEGE TRUST FUNDS

TOTAL FUNDS - 1932 AND PURPOSES OF ENDOWMENTS



GROWTH OF ALL TRUST FUNDS, 1927-1932

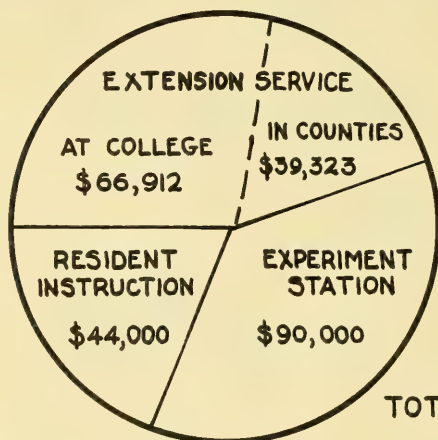
THOUSANDS OF DOLLARS.



MASSACHUSETTS STATE COLLEGE

FEDERAL FUNDS

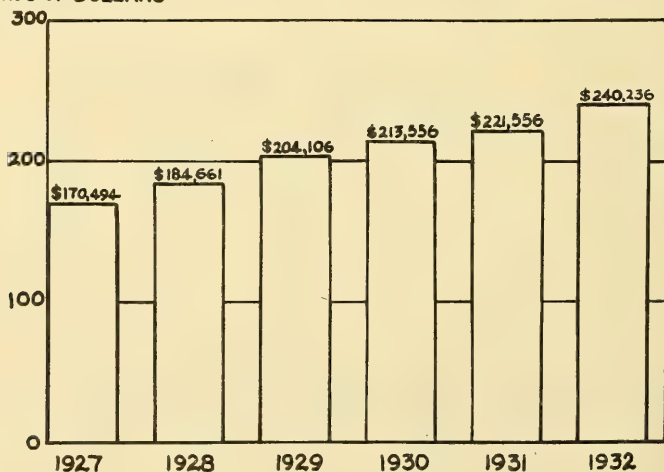
DISTRIBUTION, 1932



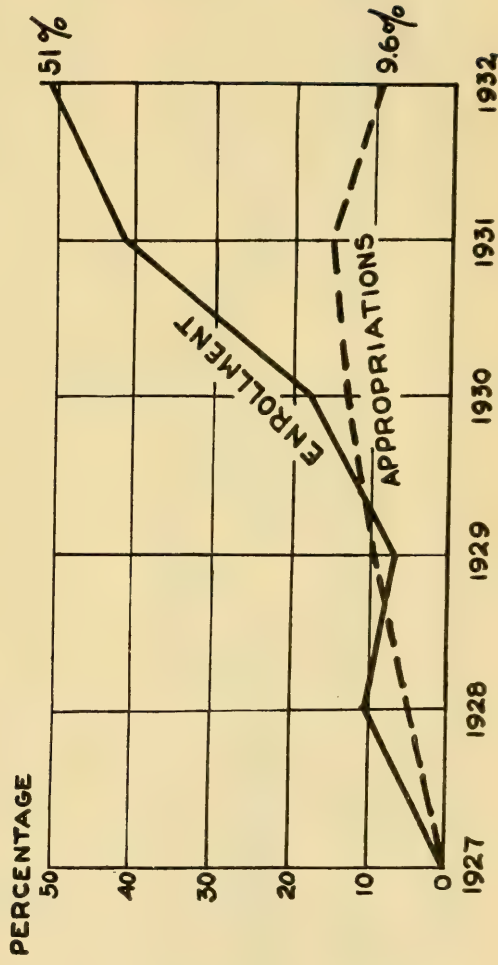
GROWTH OF FEDERAL APPROPRIATIONS TO THE COLLEGE

(FUNDS USED IN COUNTIES INCLUDED)

THOUSANDS OF DOLLARS

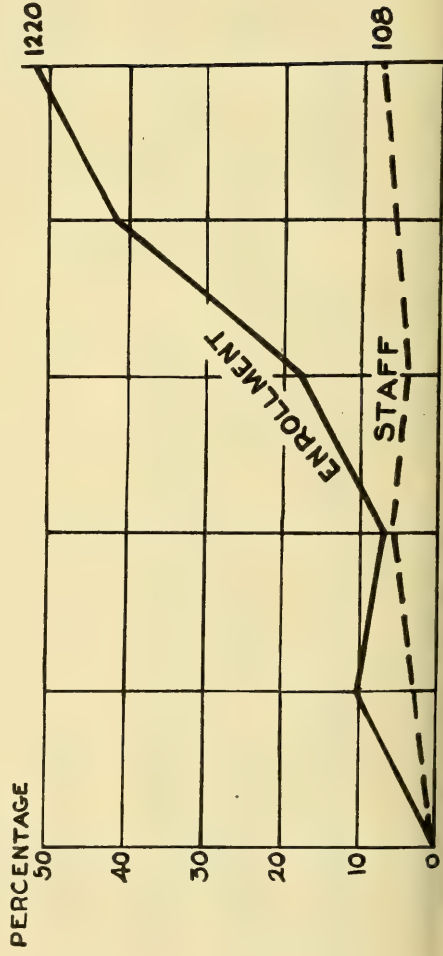


GROWTH OF STUDENT ENROLLMENT COMPARED WITH INCREASE IN STATE APPROPRIATIONS, 1927-32



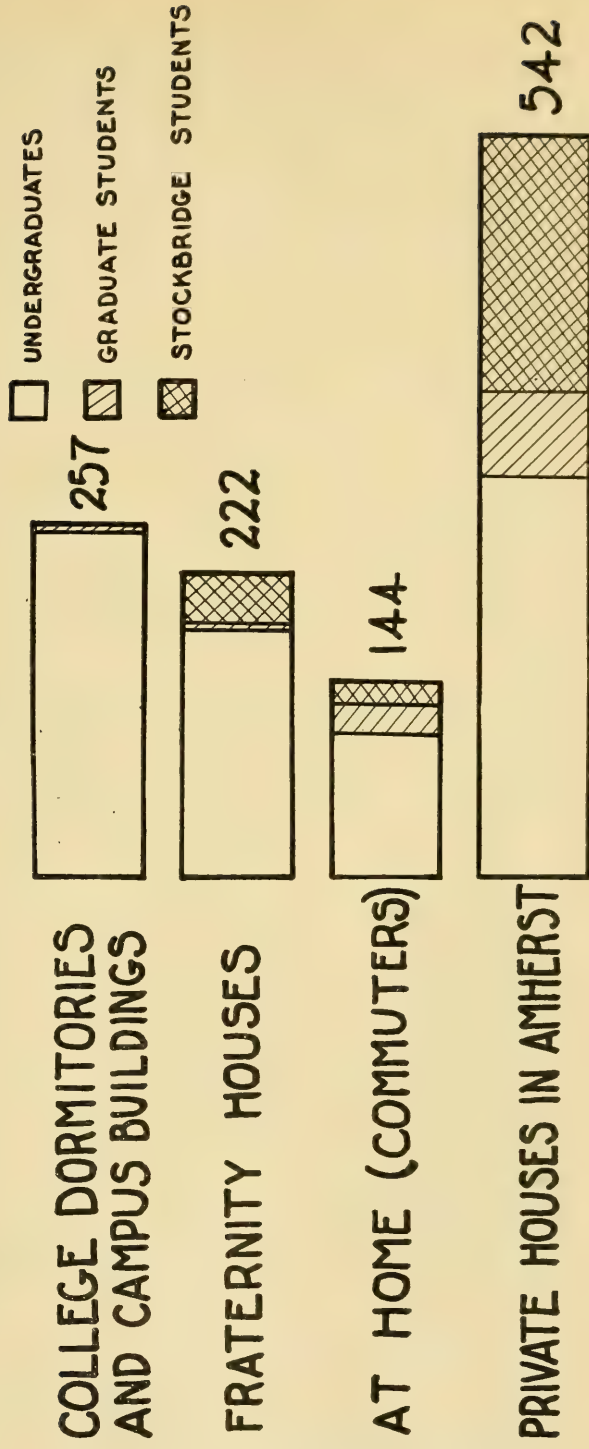
MASSACHUSETTS STATE COLLEGE

GROWTH OF STUDENT ENROLLMENT COMPARED WITH GROWTH OF INSTRUCTIONAL STAFF, 1927-32

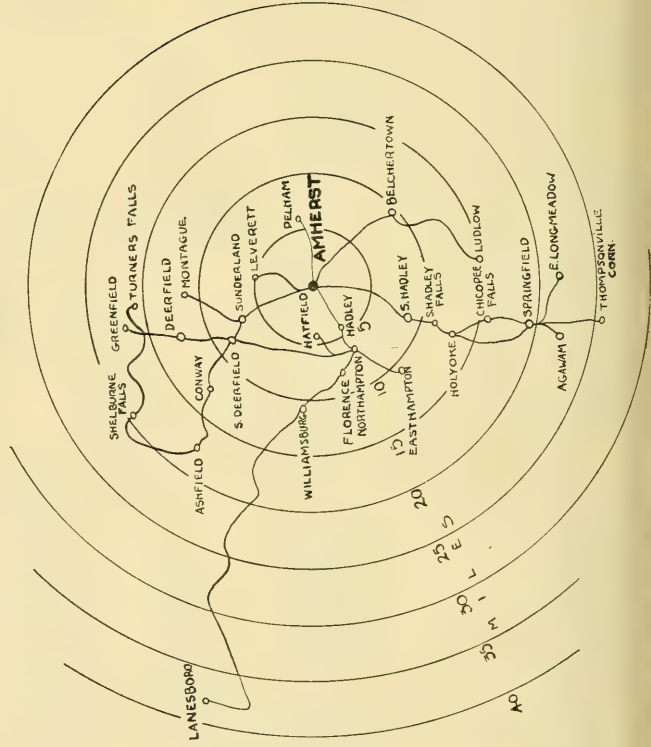


HOUSING OF STUDENTS

FALL OF 1932



MASSACHUSETTS STATE COLLEGE TOWNS FROM WHICH STUDENTS COMMUTE TO THE COLLEGE, 1932



REPORT OF THE DEAN

The increased student enrollment in September 1931 which gave us an entering class numbering three hundred and four taxed our recitation and laboratory facilities to the limit. It also forced that portion of our teaching staff concerned with freshman instruction to carry a maximum load. Hence it was apparent that, unless additional facilities were made available, the Trustees would be forced to limit the membership of the class to be admitted in September 1932 to three hundred students. Action to this effect was taken at the spring meeting of the Board of Trustees. A similar limit will be necessary next year unless additional funds are provided for a new instructor in each of the following departments: English, Mathematics, Physics, Modern Language, and Chemistry.

In selecting the entering class this year several general principles were followed, namely: (1) Preference was given to citizens of Massachusetts with but a very limited number of exceptionally well qualified out-of-state students accepted. (2) Only enough new women students were admitted to bring their number to the enrollment for 1931-32. (3) Fewer students who had failed the year before were given a second chance. (4) No transfer students whose records did not qualify them for sophomore standing were accepted.

The work of selecting a class of three hundred from no less than four hundred and twenty qualified applicants laid a very great responsibility on this office. Both the Assistant Dean and I were kept busy throughout the summer with problems concerning the admission of students and curriculum adjustments. The correspondence and clerical work necessary in following up so many candidates and enrolled students placed a heavy burden on the present office force. If the policy of handling all matters of entrance, scholarship, schedule, student records, and discipline in one office is to be continued with an ever increasing student body, a new clerk must be provided.

Early in the year the Scholarship Committee recommended a change from the three term to the semester basis. Their recommendation was approved by the faculty and the change will go into effect in September 1933. This fall all the courses were transposed from the term to the semester plan in order that the new catalogue might be published in time to permit its distribution by January 1, 1933. The splendid cooperation on the part of all the departments was most gratifying.

The depression had its effect on our student body. Only through the most careful distribution of scholarships, assignment of loans, and drastic adjustments on expenses was it possible for a very considerable number to return to College. Less than twenty members of the sophomore, junior, and senior classes failed to register this fall due to these measures. However, the demand for assistance was never greater. Our Committee on Scholarships did everything possible with our limited means to take care of these demands. A total of sixty scholarships covering full tuition was awarded by the faculty committee. These were given to members of the sophomore and junior classes almost exclusively. Three other students received \$100 each from the Travelli Fund while the Ward Fund assisted thirty-six more by amounts varying from \$60 to \$120 per student. Four new scholarships of \$200, made possible through the generosity of Charles H. Hood, were awarded for the first time this year. In addition to the above, this office has definite knowledge of at least thirty more students who benefited by scholarships of from \$100 to \$300 made available through High School Alumni Associations, Women's Clubs, and private bequests. Surely these benefactions are needed during this trying period and the great need for additional scholarship funds was emphasized constantly in addresses before Rotary Clubs, Kiwanis Clubs, and other organizations by the President and Dean.

Our rather generous loan fund helped one hundred and fifty-two students who borrowed a total of \$13,763.

Student requests for work were far in excess of the number of jobs available. To distribute the work as much as possible, no student was permitted to hold more than one campus position.

In the face of this situation, it would seem most unwise to raise the tuition rate. That the state treasury needs additional revenue is apparent and raising the tuition an additional \$40 to \$50 a year would not seem unfair, were it not that such a

measure would keep out of college some very deserving young men and women. Many simply cannot earn this extra amount at twenty-five to thirty cents an hour and at the same time keep up with their studies. But even granted that they could spare the time, there is not enough work available.

The question of student housing deserves mention. For several years we have followed the policy of housing only freshmen in our men's dormitories. This plan is working very successfully and new dormitories should be provided without delay so that all freshman men may be housed on the campus. On account of inadequate dormitory facilities, the authorities found it necessary to require women students, other than freshmen, to live in approved houses off campus. The continuance of this practice cannot be recommended. A new woman's dormitory should be built in time for occupancy when College opens in September 1933. These dormitories would be self-supporting and therefore no real expense to the State.

A student body will do its best work if it is contented. A course of study adapted to their needs, a faculty sympathetic and capable, adequate classroom and laboratory facilities are definite requirements. But suitable housing and boarding arrangements also contribute vitally to contentment.

The change from the table board to the cafeteria plan at the Dining Hall has proved a wise one and has silenced virtually all dissatisfied students. Not in many years has the College had a more satisfactory arrangement for student board.

Due to the necessity of reducing expenses a number of fraternities are attempting to board some of their members in fraternity houses. No uniform plan is followed. Generally the students do their own buying, cooking, and serving hiring only a very limited amount of outside help. Expenses can be reduced in this way, but if it is allowed to continue beyond the emergency stage a definite policy providing for adequate supervision and development must be formulated by our Faculty Committee on Student Health.

The work of our students this year has been characterized by an earnestness of purpose and a willingness to cooperate which was most encouraging to this office. Cases calling for discipline were rare indeed.

Through our selective process of admission, we have what promises to be a workable plan for picking students who are likely to succeed in college. Failures have been materially reduced the last two years during which our enrollment has been limited. Our scholarship average has been raised appreciably in all departments.

A word of commendation is due the faculty for its willingness to take on the extra assignments made necessary through an increased enrollment and a reduced budget. We look forward with confidence to the coming of our new leader, President Hugh P. Baker, believing that the College has definitely entered a new era of usefulness to the citizens of the Commonwealth.

WILLIAM L. MACHMER,
Dean.

REPORT OF THE DIRECTOR OF THE GRADUATE SCHOOL

The graduate school, or college, as a distinct and independent administrative unit in the American college organization is of comparatively recent origin. While instruction of a postgraduate nature as a supplement to the bachelor's degree has long been offered in many institutions of higher education, well organized courses in this field are a product of the present generation. Reasons for their establishment may be numerous and difficult to trace or define, but it is conceivable that the pronounced changes in our entire industrial scheme which made themselves so extensively felt in our social system during this period had a prominent influence. Truly, since education is intended to better equip for life, it is only reasonable to recognize that the methods and materials used in educational processes require modification from time to time to keep in step with all other developments resulting from the ever changing demands of organized society.

At the beginning of the present generation and prior to the organization of graduate work, efforts in collegiate instruction were confined very largely, if not entirely to philosophy and the professions of law, medicine and theology. While a great many college graduates never followed the professions, such was nevertheless the

main objective when they sought the advantages of higher education. Those who followed the professions were thrown upon the mercies of the general public which served as final judge of their qualifications. In this respect there has been little change. Whether a doctor, lawyer or preacher proves successful is, no doubt always will, and perhaps should be decided by those for whom their service is intended. This transition from student life to a professional career is decidedly abrupt and frequently disastrous. Besides it may be very unfair both to servant and served. To overcome some of the hazards of this comparatively ruthless system, the new graduate in many cases was offered an opportunity to get his first practical experience while still under the close supervision of his instructors, or under the guidance of associates who had established and proven themselves in the respective professions. Thus the jump from college student, where work was based largely on the direction of special assignment and organized classroom recitations, to a professional career, where courage, initiative, confidence and other qualities of character and personality play a prominent part, was made safer.

With the more recent pronounced development in our whole social and economic order as a result of so-called progress in organized industry, there has come a radical change in our notions of education. No longer do even a majority of our college graduates enter the professions, but instead they seek their future in the field of commerce and industry. Experience has proven that here, too, education beyond that received in the undergraduate courses is desirable and advantageous. Courage, initiative, and confidence are requisite here, also, and as a result postgraduate courses were gradually developed in these fields.

There was a time, and no doubt still is in the minds of some, when the path to be followed in gaining an education was rather definitely defined as regards subject matter. That a subject must be on a teachable basis before it can be taught is surely reasonable, and any conscientious teacher familiar with classroom instruction is fully aware of the efforts involved in developing material for a new course. This, together with the fact that we are creatures of habit, makes it perfectly natural that in education, as well as in other similar relationships we should be slow about accepting the new and hesitant about giving up the old. It was in the languages, literature, mathematics, and philosophy where subject matter was first available that initial progress was made in its organization. It is only reasonable, therefore, that these subjects should have occupied a very prominent place in early educational programs. Naturally these subjects furnished the first and for a long time the only background for the development of college work. As time progressed and our general fund of organized information increased, other subjects were gradually developed for introduction to the curricula of educational institutions. The sciences came first and these were followed by such applied subjects as agriculture, engineering, home economics, mining, etc., until it became possible also to satisfy the requirements of a high class college education through these several different approaches. The conception that education of a college grade was not advisable or thinkable without giving a very prominent place to Latin and Greek, while perfectly sane at a time when there were very few subjects besides these sufficiently developed and organized to be on a teachable basis, no longer seems sound today. Furthermore, it becomes evident that it might prove little short of suicidal to the very objectives of education themselves if that large group of individuals who found worthy subjects like languages, mathematics and philosophy difficult, irksome and uninteresting, were denied the opportunity to enter college or were discouraged in their attempts to complete the required courses. When it was contended by intelligent public sentiment and recognized by leading educators that the main justification for an education, free or otherwise, was to encourage the recipient to express himself and to render a greater service to mankind, it no longer seemed unreasonable to maintain that the ideal of education might be attained through various channels. This change in viewpoint became the major incentive in the establishment of the land grant colleges and the consequent development of their respective graduate schools. Of this development the graduate school at Massachusetts State College is a good illustration.

One objective of the graduate school should be to supplement the undergraduate work by extending to the student an opportunity to develop through experience

the confidence required to proceed on his own initiative and the courage to stand on his own feet. While this standard without question would be a very desirable goal for undergraduates also, it is difficult of attainment during this period. Then so much of the student's time is required to familiarize himself with the fundamental subject matter that he has little to spare for methods emphasizing its application. Besides, with our present pronounced public interest in higher education as expressed in the large numbers of students enrolled in our colleges, most classes are of necessity so large that the amount of close and desirable personal contact between students and instructors is distinctly limited. Also it is unfortunately true that with too many instructors subject matter becomes the end instead of the means to an education, and although they may be very effective in encouraging the student to study and to become well informed, they do not possess the imagination or vision to qualify as leaders or guides in character building, a matter deserving of major consideration in any educational program. The graduate school, if worthy of the name, should make an attempt to expose its students to those members of the staff who have proven themselves able to recognize true values.

Of no lesser significance is the need to impress the graduate student with the limitations of subject matter as set forth in textbooks written and used to supply the comprehensive background for a sound education. It is well recognized among investigators that results from researches giving negative results are rarely if ever published, and that with few exceptions only those of a positive nature reach our journals. This is true in investigations in fundamental as well as in applied subjects. Since, however, the published results from researches supply the basis for our textbooks, and furnish the major portion of the subject matter used in the classroom, it is comparatively easy for the student to reach the erroneous conclusions that most if not all experiments terminate positively, and that results under the experimental method always appear so prominently as to be easily interpreted. It is only through his own attempts at research, for which he should be afforded an opportunity, that he may learn for the first time the pronounced limitations of the subject in which he may have had almost unlimited faith. One needs only to mention plant and animal nutrition and genetics to impress upon the initiated the frequency with which investigations terminate negatively. But even in many positive cases considerable imagination, confidence, and sound judgment are required before a sound interpretation is possible. A student exposed to these conditions may learn for the first time that there are after all very few so-called facts which can be arbitrarily adhered to without a careful and proper evaluation of the social and economic factors involved. In other words, effective teaching does not fail to impress the student with the pronounced significance of human values and the need of providing a means for their expression in all relationships including science — a field in which the operation of this factor is frequently unrecognized or ignored.

What should be attempted is, to set up a system which has as its goal the development of talent and character — no mean ambition and one well worthy of our best efforts. These qualities when expressed in terms of service possible in a graduate school are: an interest in seeking truth; in developing the ability to find truth; in learning to recognize truth when found, and then the interpretation and preparation of the results from these findings in a form in which they may add to the sum total of human knowledge — a service to mankind.

The Graduate School at Massachusetts State College, therefore, does not limit itself to the ideal frequently expressed and sometimes stressed, that the "undergraduate college is trying to make something of the boy, a scientist for instance; the graduate school is trying to make science." A program of study established on the objective as quoted does not place sufficient emphasis on the personal qualities of the student and this is deemed necessary before any graduate school and its products deserve the enviable recognition to which they justly aspire.

Graduate work is offered at the State College in Agriculture, Horticulture, Sciences, Social Sciences, and Education to all students holding the equivalent of a bachelor's degree from some recognized institution. It is the intention to promote advanced study on the background of a fairly well balanced combination of equipment and personnel, with major emphasis on the latter. This plan naturally

emphasizes the relative importance of subject matter and method as against departmental organization, and provides a very desirable degree of flexibility, which is further enhanced by a total enrollment never much in excess of one hundred students. This limited number of students, when assigned to fairly practical problems under the immediate direction of an instructor who, because of the very nature of the subject matter and the environmental influence of the institution, also develops a practical slant, should become impressed with the emphasis on service.

It so happens that both the Graduate School and the Agricultural Experiment Station at Massachusetts State College are combined under the same directorship which supplies a unique and desirable incentive for bringing these two divisions into close relationships. This has two advantages: first, it makes members of the Experiment Station staff who are familiar with, and trained in research problems and methods available to direct and advise the graduate student; second, it not infrequently provides an opportunity for the most desirable type of cooperation under which the time, energy, and eventual product of the student's research may be used to supplement the requirements of the larger practical research problem under way as part of the experiment station program. Experience in the requirements for successful cooperation is in itself deemed of considerable value as a part of any educational program.

Courses leading to three advanced degrees are offered: the Master of Landscape Architecture, the Master of Science, and the Doctor of Philosophy. A satisfactory thesis based on approved research is required for all degrees. While the residence and credit requirements are fairly definitely specified in all cases, a degree is not granted unless there is evidence of general ability and character besides the satisfactory completion of an adequate assignment of work.

To aid worthy students and to facilitate undergraduate instruction, the graduate school offers eighteen assistantships each of which pays \$600 per year. Also, several industrial agencies which have seen fit to request special research service from the Experiment Station, are at present providing financial support for this purpose in the form of fellowships.

It is believed that the citizenship of the Commonwealth of Massachusetts is not fully aware of the opportunities for graduate work offered at the State College — nor of the enviable position that the institution holds because of the records of its former students.

F. J. SIEVERS,
Director of the Graduate School.

REPORT OF THE DIRECTOR OF SHORT COURSES

I present herewith the annual report covering activities of this department for the year 1932.

Winter School

The annual short course Winter School continues to afford useful training opportunities for people who can take only short units of work in special fields of study. Interest in the five-day dairy courses is well maintained resulting in a considerable number of short course students taking this work exclusively. By arranging the dairy program in a consecutive series of four five-day periods of intensive practical training, the Dairy Industry Department makes it possible for a student to complete any one or all of the courses offered, spending from one week to one month in the process. Special lectures by prominent men from various commercial concerns in the industry are given to tie up the teaching with business practices as closely as possible.

With constant and increasing stress being laid upon the cleanliness of dairy products as a safeguard of health, many producers and distributors have been seeking more accurate knowledge of proper control methods. Beginning last year Dr. Leon A. Bradley organized a new short course in Dairy Bacteriology which will help to meet this need among progressive dairymen.

The student group taking these short course programs is always an interesting one because of the many vocations and professions usually represented. This year two registered pharmacists, operating their own stores, enrolled for the Ice Cream

Courses, both by coincidence coming from Providence, Rhode Island. As a mark of appreciation for the valuable assistance he had secured here, one of these gentlemen donated a fund of \$50.00 to be awarded in annual prizes to dairy short course students.

The Winter Course in Greenkeeping under the able direction of Lawrence S. Dickinson, Assistant Professor of Agronomy, again had a maximum enrollment. During the six years this course has been given we have had more applications regularly than we could accommodate. Of the ninety-six men completing the course in this period our records indicate eighty-seven are employed in golf course maintenance at the present time. It is significant usually of unique features in a course when students attend from considerable distances outside our state boundaries. This year one student registered from Banff, Alberta, Canada.

COURSE ENROLLMENT

General Farming Course	11
General Farming Course — Advanced	5
Greenkeeping Course	15
Greenkeeping Course — Advanced	9
Poultry Course	11
Ten Day Dairy Bacteriology Course	7
Milk and Cream Testing Course	20
Milk Plant Operation	13
Ice Cream Making — Beginners	19
Ice Cream Making — Advanced	19
Special Course	2

Housing and Boarding Arrangements

Last year constant objections were raised by Stockbridge School freshmen because they were required to eat at the College Dining Hall. The compulsory boarding system has been abolished for them this year and the new arrangement is proving much more satisfactory. This adjustment allows those who live at considerable distances from the College to secure boarding places more conveniently located to their rooms.

While an increasing number of private homes have been made available for student roomers, overcrowded conditions are still prevalent and many of our students have to live at long distances from the campus.

Stockbridge Placement Training

The following material is submitted from the report of the Supervisor of Placement Training, Mr. E. E. Grayson. It indicates the strenuous efforts needed to keep the practice training program functioning for our students in the face of such unsettled economic conditions on our New England farms and in other agricultural businesses in which Stockbridge School students are employed normally.

"The placement training period just passed, as anyone could easily surmise, was the most difficult of any experienced by the present supervisor. In the early spring the possibility of abandoning required placement was brought before the Stockbridge Advisory Committee for consideration due to the great scarcity of jobs. At that time it was voted to go ahead as in former years and place as many men as possible. Due to the fine cooperation of our graduates who were in a position to employ one or more students, as well as the hearty support of former employers, the program was carried through quite successfully in view of present conditions."

"There were 117 men students eligible for placement. All but two of these men were definitely placed on a job for the season, but in several instances the employer, due to lack of cash and shortage of work, was unable to go through with his side of the agreement, forcing him to lay off the men early in the season, or as happened in the case of three men, caused him to put off employing the students from time to time and ended by not employing them at all. A peculiar feature in regard to the last three men mentioned lies in the fact that the employer or prospective employer in each case was one who has had placement training students for the past several

seasons, and has always employed the men full time at good wages. The two students who were not assigned to jobs insisted on geographical restrictions which could not be met."

"Fourteen students withdrew from school for various reasons during placement or in the fall. Most of the withdrawals were due to lack of finances."

103 men returned after placement

2 men failed placement

101 x 6 months = 606 work months if all worked full time

74.42 work months lost by 22 students

101 men worked 531.58 months or an average of 5.26 months per student

22 men lost 74.42 months or an average of 3.38 months per student

5 men did not work at all

17 men lost an average of 2.61 months

79 men worked a full placement period

"Students taking their major work in the department of Dairy Industry had the most lost time due to concerns laying off men caused by a rather cool summer coupled with a general lack of money for ice cream which is more or less of a luxury. General Horticulture majors were second in the amount of time lost on placement jobs. All the men majoring in Fruit Growing and Vegetable Gardening worked full time."

Stockbridge Senior Employment

"The percentage of men having jobs on graduation last June was considerably smaller than in former years. Our graduates, however, were in a much better position in this respect than the graduates of most colleges."

"Following is a table showing employment distribution by major courses from figures compiled shortly after graduation."

	Men in Department	Number Employed	Men Returning to Placement Employer
Animal Husbandry	14	14	3
Dairy	12	6	3
Poultry	13	8	0
Floriculture	12	12	5
Horticulture	24	16	5
Fruit Growing	12	6	3
Vegetable Gardening	3	3	2
Totals	90	65	21

Stockbridge Graduation

Special mention should be made of the distinctive graduation exercises carried out by the class of 1933 for the first time in the history of the School. Instead of some noteworthy individual being engaged for the graduation address, the faculty chose four outstanding students whose experiences on placement training would present an interesting cross section of this unique phase of the school training of particular interest to parents and friends.

The following program was carried through most effectively and with marked credit to the students participating: —

Charles W. Dawson of Holliston

"My Six Months Placement Training in Germany"

Leslie M. MacAdams of Chelsea

"The Organization and Responsibility of a Modern
Dairy Distributing Business."

Henry K. Weidlich of Springfield

"Training for a Career in Floriculture."

Arthur L. Wiley, Jr., of Wakefield

"Life, Beauty, and Peace." (A paper on cemetery maintenance.)

The class of 1933 also made a significant contribution to the teaching facilities of the Department of Horticulture when, as a graduation gift to mark their esteem

and appreciation, they presented to the College a collection of some ninety varieties of evergreen plants suitable for grounds decoration. This net material practically doubles the specimen types hitherto available for class study on the campus. The interest in the College and the spirit of cooperation shown by such gifts from students of the Stockbridge School whose only immediate contact with the institution is covered by a brief period of fourteen months of actual resident study is especially commendable.

Fall Registration (Stockbridge)

The 1931 class of the previous year had brought in one of our largest enrolments, 147 students. Early in the summer of 1932 it became evident that applications were not as numerous and the final registration for new students in October revealed a freshman group numbering 124, or a shrinkage of 23 students from the preceding year.

While the senior class should have been a large one, judged by its freshmen figures, the poor earning conditions on placement made it impossible for a number of seniors to return. Transfers from the county schools of agriculture helped to bring the total class group to 114 students. Total enrolment for both classes gives a registration of 242 for the current year.

Respectfully submitted,
 ROLAND H. VERBECK,
Director of Short Courses.

REPORT OF THE LIBRARIAN

The Library now contains 93,922 regularly catalogued books, in addition to a considerable number still uncatalogued. The net gain during the year was 2,620 volumes. The number of department libraries is now 42.

The Library has been kept open for study and borrowing of books 343 days. During the academic year the building is still kept open fourteen hours per day on week days, and five hours on Sundays. There were loaned for use outside the building 11,724 books, 752 pamphlets, and 61 volumes for loans to other libraries. The months of largest circulation were April, 1530; October, 1520; and February, 1415.

Over five hundred periodicals, and many other serials, are received and filed ready for immediate consultation.

The large task of revising radically the pamphlet collection containing unbound serials and miscellaneous pamphlets was completed during the year, and resulted in much saving of space, together with rendering the material retained much more readily accessible. This was a notable step ahead in the long labor, extending now over eight years, of getting the library into proper order. The arranging and cataloguing of the Memorabilia or College History Collection is now being undertaken. With this completed, one or two years more should see the Library at last in order. This will aid greatly in transferring it to another building, if and when the long-needed new structure appears. The great need of the Library continues to be space for readers, for storage of books, and for office work — with fireproof protection for its priceless collection of books.

B. B. Wood,
Librarian.

REPORT OF THE DIRECTOR OF THE EXTENSION SERVICE

The extension service has been directing its work toward the solution of the major problems facing those engaged in making a living from the operation of a farm, or managing a home under conditions of falling prices and reduced incomes. It has, at the same time, closely studied ways and means of reducing costs and making its own management more efficient, with the result of making savings in money beyond the amounts required to meet the budget allotted to it for 1931.

The practical men and women of the farm and home who are working as local demonstrators and leaders in teaching adults and juniors, after receiving instruction

in subject matter and teaching methods, are becoming more effective with each year's experience. We find the best and most permanent results are obtained when local farmers participate in leading their educational programs, and extending the instruction of the subject matter specialists, whether it deals with improved crop and livestock practices, more efficient marketing, or reducing production costs. The homemakers and the young people have been able to get the benefit of the economy programs in all phases of home economics in large numbers, through the effective work of local leaders who have voluntarily given their time to secure training from extension workers in order to teach in turn groups of friends and neighbors.

Approximately two hours a day are being given by the radio stations of the state to the broadcasting of information prepared by our staff. On the basis of a survey made during the summer and the number of requests received for bulletins, it is estimated that our radio audience for Farm Flashes numbers about 5,000. At the present time, seven stations are using our daily broadcasts of Farm Flashes, and Station WBZ gives a regular period each week for a farm forum, a home forum, and a 4-H program.

Our informational news service of about 19 releases per month has been continued to a selected list of approximately 100 daily, weekly, and farm papers. Sixteen extension leaflets have been revised and nine new ones printed. Many individuals who are not able to participate in some phase of our extension teaching within the counties derive a great deal of assistance from these publications which they secure upon direct request.

The finest and least expensive Farm and Home Week program was presented to the largest attendance ever recorded. The citizens of the Commonwealth are realizing that the week affords not only an opportunity to secure information of vital interest in conducting their farm and home activities, but also a profitable vacation. Small unit exhibits were again featured at the various fairs in the state; one of the most popular was a coordinated exhibit on gardening, canning and nutrition. Program Hints, a monthly service to program committees, was distributed to about 350 organizations.

For the past six months, committees of the agricultural specialists have been formulating long time extension programs to improve the profitableness of the dairy, poultry, and apple industries of the state. These programs first state the situation of each industry and the things which have caused it. From the situation and causes, the major problems are set forth and the possible solutions for them are outlined. To bring about the solutions, teaching plans are made with division of responsibilities definitely agreed upon by all of the college and county extension teachers who participate in any way toward the goal of making dairying, poultry keeping or apple growing more profitable in Massachusetts.

The cooperation of the resident and experiment station staffs of the college has been most generous and it is greatly appreciated.

Agriculture

Continued restriction of farm incomes has driven farmers to the consideration of costs and prices in a more detailed manner than ever before. Such a study on their part calls for a large amount of preparation by our staff. All the facts relating to the cost of production and distribution must be studied in order to present the most useful information in simple terms. The effort to supply this need has kept our staff very actively engaged. More questions relating to the marketing of farm products, such as milk, eggs, potatoes and apples have been presented for attention. In every instance the undertakings of farmers have been directed toward an organized effort to correct market difficulties. Chambers of Commerce and other civic bodies have assisted in arranging for impartial studies of the situation. In many instances these efforts have resulted in a better outlet for local products.

The educational phase of the tuberculosis eradication campaign has been a major activity in animal husbandry. Although this work is definitely under the Division of Animal Industry, our county agents, because of their close contact with groups of farmers, have found it helpful to the interests of dairymen to cooperate in advancing the program by supplying the needed information to get the widest circulation of petitions for herd tests.

The increased attention of producers of all sorts of farm commodities toward the elimination of disease as an unnecessary expense and burden is very encouraging. Thus, we see the activities of farmers have been directed not only at the problems of getting higher prices, but also toward eliminating unnecessary costs in production in order to survive drastic price reductions.

Agricultural Economics

The work of collecting and analyzing facts for farmer groups who are attempting to work out methods of adjusting their systems of farming and of marketing in order to secure maximum farm incomes, has been continued and expanded during the year. As a result of this work, poultrymen of Plymouth County have adopted a program of more even seasonal production of eggs in order to effect economies in production and make possible more efficient marketing. A further step in the same program has been the establishment of a cooperative egg auction, an entirely new method of merchandising eggs within this State, which is now furnishing an outlet for eggs produced on about two hundred twenty-five poultry farms in Plymouth and adjoining counties. The problem of quality is now being considered in this program.

The dairy farmers in Fall River and New Bedford sections have been furnished with a plan for organizing to stabilize the milk market. This involves the working together of the milk producers and milk dealers on a contract basis. The plan has been put into effect, and some six hundred dairy farmers now sell their milk to their association, which in turn sells it under contract to the dealers who distribute in these two markets. The close supervision of the farms through the local Boards of Health has made possible organization of these two markets on the present basis.

Information bearing on the production and market outlook for apples, dairy products, potatoes, poultry products, tobacco, onions and market garden crops has been prepared throughout the year. This material has been distributed through the New England Outlook report, Farm Economic Facts, special commodity releases, publicity articles, radio broadcasts, price situation meetings, outlook meetings and committees of local leaders.

Agricultural Engineering

Plans for dairy barns, milk houses, ice houses, and minor structures and equipment have been made and circulated. Information on dairy equipment, particularly for milk cooling, water heating, sterilizing, hay chopping, silo filling, protection from and detection of contamination of farm water supplies, electric and natural draft ventilation, and sewage disposal, both domestic and dairy, has been prepared.

Because of the present low income from dairy products, no effort is being made to encourage anything that will increase the cash outlay either in original investment or operating cost without increasing the income to an amount sufficient to make these devices profitable. Conveniences that are both expensive and non-remunerative are not being encouraged.

Some work has recently been done in the way of poultry housing and equipment. A two-deck and a three-deck poultry house have been designed together with a poultry house watering system.

Agronomy

The growing interest and importance of potatoes as a crop in Massachusetts has been reflected this past season, when forty growers achieved better than 300 bushels per acre on measured yield. Furthermore, record yields of three growers over 600 bushels per acre; of five others growing better than 500 bushels; and fifteen others growing better than 400 bushels to the acre; testify in a large measure to the adoption by growers of improved methods. Field plot tests of new varieties, fertilizer mixtures, seed treatment, and cultural practices have added information for further development of the work another year.

In the production of winter feed crops, over 600 acres of alfalfa were planted. A large number of farmers have adopted the recommended use of cheap nitrogen

fertilizer for top-dressing hay. Continued publicity for the improvement of summer grazing needed for economical feed has influenced over 2,000 dairymen to adopt some measures of pasture improvement this year with satisfactory results. Preliminary demonstrations of Ladino clover as a new pasture crop have aroused interest, and it merits more extensive trials another year. Actually, thousands of dairymen have become "pasture conscious" during the past few years largely as a result of extension activities.

Animal Husbandry

Two-day breeding schools were held in seven counties. Following these forty-six sires were entered for proving. Farm visits and correspondence resulted in obtaining records on nine living bulls which could be recommended as having transmitted satisfactory production capacity to their daughters.

Herd Improvement Association membership increased in Worcester County sufficiently to call for two more supervisors, bringing the total of cows in associations to more than one thousand fifty. In other counties membership in associations was maintained at the previous level, which is gratifying in view of greatly decreased incomes for most members.

On a decreased appropriation, 40% more tests of cattle for tuberculosis were applied for than in 1931. Petitions for the area test are on file from 291 cities and towns, leaving only 64 which have not filed petitions. Forty-one towns are accredited and the area test has been applied in 156 towns.

Farm Management

In providing farmers with economic information as an aid to production planning, assistance has been given in the preparation and dissemination of outlook material. As a further aid in helping farmers to meet the present situation, adjustments were discussed with leading farmers in each county and these were later formulated in statement form; given publicity through press articles; and distributed for the benefit of large numbers of farmers by various other means.

To assist farmers in improving their business organization, study groups were held in five counties. Through these, the use of accounts as a means of detecting weaknesses in their business organization, means of expanding business and principles of farm management were taught.

About twenty-five potato records and forty-five orchard records were brought through to completion for analysis and for use in demonstrating to large numbers of growers the factors which make for greatest economies in the production of these crops.

The use of accounts, the use of outlook information in production planning, economies in producing milk and in poultry farm operation were discussed and mimeographed reports distributed. Index numbers, for most commodities sold by Massachusetts farmers as well as for several commodities that farmers buy, have been constructed and are being kept up-to-date for use in keeping farmers better informed as to the relation between cost of production and probable returns from various lines of farming.

Forestry

One hundred forty-five towns have been visited in connection with improved forestry practices. Thirty individuals have thinned 363 acres, 46 have pruned 526 acres of pine according to instructions to improve their woodlots, and 40 have weeded 262 acres. Individual owners in 36 towns have planted 132,000 trees. Supplementing the information recently secured on the use of wood products in the State, a study of materials available for this market from the West Coast was made. Two school forests were established last year and others are under way. The planting of Christmas trees has been encouraged and many requests for information regarding this have been answered.

Horticultural Manufactures

As the result of demonstrations emphasizing the correct principles for refrigerated storages for apples, three plants of 50,000, 15,000 and 5,000 bushel capacity were

completed. Also ten air-cooled, or common storages, have been or are being constructed.

A considerable amount of effort was put into discussing with welfare boards and other interested parties, a special project which had to do with the creation of garden areas and the canning of produce from these areas to assist in relieving pressure on welfare funds. The city of Pittsfield, acting under advice from the specialist and the county agent, organized and carried through a project for thirty-four acre welfare garden and a canning plant which put up a total of 110,000 cans of vegetables. This activity has worked out to the creation of approximately two dollars in food for each dollar of cash actually invested.

Plant Pathology

The spray service, via daily radio broadcasts and by post card notices, has been continued for the use of fruit growers. Demonstrations of a new system for the control of diseases of squash in storage by disinfection have greatly decreased the loss from rot. Thorough disinfection of plant houses has been carried out in a series of demonstrations to cut down the loss of young plants. Talks and assistance have been given to vegetable growers on the control and prevention of diseases. A large number of specimens have been examined to diagnose diseases, in response to special requests. The usual crop disease survey has been made throughout the state in order to prepare information as to control.

Pomology

Much of the time in Pomology has been devoted to matters of pest control which centers around the "90% Clean Apple Club." During 1932, fifty-five growers succeeded in producing a commercial crop scoring "90% Clean", that is to say no more than one apple in ten showed disease injury. The total crop in these orchards is well over sixty thousand bushels. In apple maggot control work, it has been clearly demonstrated that present day recommendations involving late season sprays and a clean up of environment will successfully combat this troublesome insect. Out of one hundred six orchards inspected during the past harvest season about twenty-five showed perfect maggot control. Other items which have received some attention during the past year are the demonstration of correct pruning and spraying practices. A new project on a more profitable fertilization of strawberry plantings in the Falmouth section was initiated this season.

Poultry

Surveys, to determine the best method of improving the marketing of eggs, have been undertaken in various sections of the State, cooperating with various organizations. Some ill-advised marketing efforts have been prevented by the careful interpretation of definite information. Improvement in poultry stock is of major importance in preventing high costs of production of eggs, and the interest of poultrymen in this phase of their business is indicated by the fact that study groups have been well attended in five counties where the principal attention has been directed to the breeding problem.

New information, which has recently become available, on proper ventilation of poultry houses has aroused interest in poultry housing. Flocks affected by the disease Laryngotracheitis have been cleaned up by sanitation methods; disposing of the old infected birds and rearing new flocks in quarantine. Demonstrations in the preparation of poultry for market have met with great interest on the part of poultrymen, as it increases the income when they can sell their poultry dressed rather than alive.

Rodent Control

Two county-wide rat campaigns were held, one using about 1800 packages of rat bait, and the other a publicity campaign urging the purchase of suitable control materials from local dealers. Recommended practices in the control of mice in the orchard were made available to fruit growers. Experimental work in cooperation with the Department of Horticultural Manufactures on the development of new and better rat bait was continued.

Home Economics

The 1932 program in home economics extension work for the homemakers of Massachusetts has continued along the educational lines of presenting scientific information upon which homemakers may base choices, decisions and judgment. Programs which are helping to meet the present changing economic and social conditions include making the most of what we have in rural homes and communities in the fields of home furnishings, clothing, foods and nutrition, home management, health, recreation and parent education. Assistance has been given to related agencies, especially those dealing with relief programs. Community studies conducted in several of the counties have been a means of making homemakers aware of existing situations, especially as they relate to child health and protection. Lay leadership developed during recent years is now functioning in assuming responsibility for emergency relief measures and in showing initiative in carrying out these programs.

Child Development and Parent Education

Realizing that a feeling of security which comes from a confidence in one's environment is essential in adult living, factors which are instrumental in developing a sense of security, and self-confidence, are emphasized throughout the child development project. This is a crucial need during times of general economic stress and uncertainty, when the relationships become somewhat strained within the family. An effort has been made to distinguish between the significant and non-significant in child training, to recognize that time is a healer and that many problems disappear in development. Emphasis is given to the child's need for early experiments and ventures through which he may arrive at an underlying basis for living. Attention has been given to the important factors in the utilization of equipment, furnishings and arrangement of the home as the physical background for the development of the individual and family life.

Clothing

This program has always been concerned with ways of helping the homemaker of limited income to work out her family clothing problems. It was apparent this year that, with less money than ever available for family maintenance, clothing expenditures would be reduced to a minimum. Therefore, every effort was made to organize instruction on remodeling and renovating of clothing to reach the largest possible number of homes. Projects in remodeling clothing were carried in nine counties. In six counties, this was a training program for leaders who would in turn help their community welfare groups. In six counties, programs in making children's coats, hats and play suits were carried. Most of these garments were made from old ones, although some mill end remnants and discarded wool blankets used in paper manufacturing were used. Fabrics were laundered, dyed, pressed, and most attractive warm garments were made. In one county, 25 communities were enrolled and reported making 270 coats and many hats and play suits. Many of these garments cost nothing. In another county, 732 women have made 1,356 new garments and remodeled 746, with an estimated saving of over \$6,000.

Community Program Planning

Volunteer leaders of public organizations and playgrounds have been trained; community programs have been planned; play directors have been given assistance; materials to be used evenings at home with the family have been suggested; instructions for the making of home-made play equipment have been given and programs for family music have been stressed. Studies have been made in order to get the facts regarding recreational facilities of a community and assistance given in formulating plans for community centers and recreational programs. To develop a consciousness of the need of recreation in the life of the individual and at the same time a wise use of leisure time is one of our objectives in our community program planning.

Food Preservation

Less money for the food budget for the family necessitated more home vegetable gardens and more home canning during the current year. In order to insure an adequate diet for the family during the winter months, canning demonstrations were held in all of the counties of the state. There was an increase of 25% in the amount of home canning.

Home Furnishing

The aim of the living room project is to make that room so attractive and usable that the whole family will enjoy living in it. Special emphasis is placed on the arrangement of the furniture. The improvement of color, design, and workmanship in handicraft has been the purpose of the assistance given in the home industries project.

Home Grounds

During the past year when men and young boys have had more time than usual, many improvements have been made both on home grounds and community grounds. Demonstrations arranged at the request of communities include improved parks, playgrounds, and plantings around community centers. In cooperation with 4-H club groups, such activities as schoolhouse planting and school gardens have been included in the program.

Home Management

Special emphasis has been placed upon the use of time in order to help the homemakers discover methods of least waste of time, effort, or money devoted to household tasks and to point the way to an enrichment of family life through a wise use of the resources that are released. An effort has been made to give assistance in the planning for the use of time so that there is time for creative and productive activities and leisure time for rest, recreation, and participation in community activities. The use of the available time of all members of the family for the making of such improvements as add to the attractiveness of the home and make for a more satisfying home life has been emphasized. Assistance has been given to many homemakers who are adding to the family income through some form of productive work such as tourist homes, wayside stands, tea rooms, and handicraft.

Household Accounts

Since many incomes have been reduced within the last few years, homemakers feel the need of assistance in handling family finance. The household account project is planned to meet this need by having the homemakers keep a record of the family expenditures. These expenditures are studied and, with the help of the specialist, the family decides whether they think they received the most for their money and can plan accordingly. At least they know where their money goes.

Nutrition

Economy in food purchasing has been emphasized during the past year, always keeping in mind diets that are nourishing and adequate. For those with very low incomes, diets including milk, vegetables, dark breads and breakfast foods have been particularly emphasized. The food preservation, gardening and nutrition specialists have worked together to make available vegetables in the home garden and teach their value and use in the family meals. Cooperating with the extension editor, a series of articles on inexpensive and nourishing foods have been sent to the newspapers. We have made a special effort this year to work with mothers of large families. Advice on how to best spend food money for needy families has been given to welfare agencies of towns in different parts of the state.

4-H Club Work

The slogan for 4-H Club members for 1932 has been, "Do more and more with less and less." More young people between the ages of 10 and 21 were enrolled during 1932 than in 1931, and the number completing all requirements of their

projects is higher. Added attention is being given as to how to reach and hold the interest of club members between the ages of 16 and 21. The leaders' training camp last year proved such a success that Camp Gilbert was extended to cover a period of two weeks and only older club members who were either leaders or prospective leaders were invited to attend. The program was planned to cover such subjects as would help those in attendance in carrying on clubs in their local communities. Service clubs are now organized in twelve counties.

Boys' Club Work

Increased enrollments and general improvement in the boys' projects can undoubtedly be attributed to the economic conditions. This is especially noticeable in the number enrolled in the garden project, number of birds entered in the egg laying contest, more counties holding training meetings for handicraft leaders, and an improved quality of the dairy animals. At one of the county fairs, 19 out of a possibility of 24 championships were won in the open classes by club members. Our state dairy demonstration team placed third among 19 contesting states at the National Dairy Cattle Congress in Iowa and the poultry team was second at the National Pet Show in New York. Competition in and out of state is a factor in holding the interest of older club members. Many more older boys are volunteering to act as local leaders, which, no doubt, is due to the interest aroused at Camp Gilbert.

Girls' Club Work

Meetings for older club girls are on the increase throughout the state. In these clubs personal improvement is stressed and much attention is given to those matters which relate to health. Homecraft has created new interest and led to the making of useful gifts for Christmas and birthdays. Garden and canning work went hand and hand this year. One city in Massachusetts reports 35,000 jars canned, and at Greenfield Fair 3,200 jars of products were exhibited by club members. A canning exhibit with demonstrations was one of the features at Camp Vail, the 4-H camp at the Eastern States Exposition. Clothing clubs continue to hold the lead in enrollment. Much interest has been shown in remodeling and renovating clothing; in response to this increase a "Thrift" class for renovated garments was inaugurated in the dress revue.

WILLARD A. MUNSON,
Director of Extension Service.

REPORT OF THE TREASURER

The Treasurer's annual report for the year ending November 30, 1932, is submitted herewith.

At the beginning of the year we were impressed by the great need of economy and our appropriation was reduced over \$50,000.00. While we were not only able to absorb this amount, we were able to turn back to the State Treasurer at the end of this fiscal year over \$13,000.00.

The report contains a statement of the receipts and disbursements for the past five years.

The total available funds from all sources, including Federal State and Trust funds, was \$1,743,191.54. The total expenditures were \$1,537,024.97, leaving a balance of \$206,166.57. An analysis of these figures is given below, showing the State appropriation, the Federal appropriation, total expenditures, and the balance.

	State Appropriation	Federal Appropriation	Total Appropriation	Expenditures	Balance
College	\$633,426 46	\$70,947 75	\$704,374 21	\$661,805 76	\$42,568 45
Experiment Station	107,116 43	99,099 82	206,216 25	196,950 90	9,265 35
Extension Service	103,669 27	109,512 68	213,181 95	179,011 39	34,170 56
Short Courses	71,405 19	-	71,405 19	69,060 53	2,344 66
Waltham Field Station	10,945 77	-	10,945 77	10,871 28	74 49
Control Laws	75,167 19	-	75,167 19	66,687 17	8,480 02
Trustees' Travel	1,216 97	-	1,216 97	1,299 03	-82 06
Printing Reports	1,433 99	-	1,433 99	425 49	1,008 50
Replacements	10,326 42	-	10,326 42	9,697 92	628 50
Special Building Projects	45,906 26	-	45,906 26	26,798 85	19,107 41
Totals	\$1,060,613 95	\$279,560 25	\$1,340,174 20	\$1,222,608 32	\$117,565 88

	State Appropriation	Federal Appropriation	Total Appropriation	Expenditures	Balance
<i>Trust Funds</i>					
Trust Account	-	-	\$7,313 56	-	\$7,313 56
Endowments	-	-	26,901 66	\$8,454 63	18,447 03
Other Funds	-	-	368,802 12	305,962 02	62,840 10
	-	-	\$1,743,191 54	\$1,537,024 97	\$206,166 57

The College appropriation for current expenses for the year was \$993,550.00, and there was brought forward from the last fiscal year an amount of \$21,157.69 to cover bills that were incurred in the previous year. This made the total amount available \$1,014,707.69. The expenditures for the College were \$979,330.28, leaving a balance of \$35,377.41. Of this balance, there are outstanding accounts in the amount of \$22,362.85, listed below:

College bills	\$10,052 15
Fuel account	10,445 78
Experiment Station	1,144 60
Extension Service	648 62
Short Courses	71 70
	<u>\$22,362 85</u>

This leaves a balance of \$13,014.56 which reverts to the State.

Special appropriations made by the Legislature for 1932 amounted to \$10,000.00, and included:

\$5,000.00 for Emergency Needs

1,500.00 for Repairs to New Durfee Range

2,000.00 for Improvements at Fisher Laboratory

1,500.00 for Repairs at the Harlow House

In addition, we received \$1,350.00 from the Governor's Emergency Budget for the replacement of the Harlow barn and shed which were destroyed by lightning under date of July 1, 1932. A statement of expenditures of our special appropriations is as follows:

	Appropriation	Expenditures	Balance
1930 Physical Education Building	\$10,626 74	\$10,344 04	\$282 70
1930 Remodeling North College	328 50	328 50	-
1930 Water Main	2,711 87	2,647 65	64 22
1931 Timber and Forest Work	827 02	827 02	-
1931 Emergency Needs	3,500 00	-	3,500 00
1931 Renewal Steam Line	14,700 00	4,661 59	10,038 41
1931 Automatic Stoker	3,000 00	2,922 58	77 42
1931 Lumber Shed	212 13	-	212 13
1932 Emergency Needs	5,000 00	1,000 00	4,000 00
1932 Renovating Greenhouse	1,500 00	1,245 97	254 03
1932 Fisher Lab. Improvements	2,000 00	1,326 63	673 37
1932 Repairs to Harlow House.	1,500 00	1,494 87	5 13
	<u>\$45,906 26</u>	<u>\$26,798 85</u>	<u>\$19,107 41</u>
	Less reverted		4,141 60
			<u>\$14,965 81</u>

Receipts of the Institution for the year were \$266,611.43. This is a decrease of \$4,937.91 over last year. An increase is shown in student receipts but this is offset by a decrease in receipts from the Control Laws.

The inventory of the College shows a value of \$3,220,625.55, a decrease of \$27,847.97 over the preceeding year.

The income of our Endowment Funds was decreased by \$165.00 due to a default in the payment of bond interest on State and Washington Building bonds, \$75.00 and New York Central stock, \$90.00. 152 loans to students during the year amount to \$13,763.00.

An examination of the accounts of the Institution for the fiscal year ending November 30, 1931, was made under the direction of the State Auditor. The endowment funds were audited by the Trustee auditor, Mr. Frank Gerrett.

A complete statement of all receipts and expenditures follows.

FRED C. KENNEY,
Treasurer.

REPORT OF THE TREASURER

FOR THE FISCAL YEAR ENDING NOVEMBER 30, 1932

CONSOLIDATED CASH STATEMENT

1931		Debit	Credit
Dec. 1	To balance on hand	\$57,688 99	
1932			
Nov. 30.	To departmental income	266,611 43	
Nov. 30.	To receipts from State Treasurer	814,296 16	
Nov. 30.	To receipts from United States Treasurer	216,589 60	
Nov. 30.	To bills paid by State Treasurer	198,079 77	
Nov. 30.	Refunds transferred to State Treasurer		\$965 14
Nov. 30.	Expenditures for fiscal year		1,222,608 32
Nov. 30.	Income transferred to State Treasurer		266,611 43
Nov. 30.	Balance on hand		63,081 06
		\$1,553,265 95	\$1,553,265 95

CASH STATEMENT

	Other Funds	State Funds	Totals
Balance December 1, 1931	\$57,688 99	—	\$57,688 99
<i>Receipts</i>			
College receipts from students and others	—	—	100,066 12
Tuition	—	\$51,325 75	—
Laboratory fees	—	12,805 00	—
Rent	—	23,406 32	—
Other charges to students	—	12,529 05	—
Department Sales	—	—	70,168 90
Products	—	62,935 57	—
Miscellaneous	—	7,233 33	—
Experiment Station	—	—	6,981 71
Chemistry	—	448 28	—
Cranberry	—	1,938 62	—
Pomology	—	1,092 04	—
Poultry	—	1,935 82	—
Station Service	—	1,557 95	—
Veterinary	—	9 00	—
Extension Service	—	—	328 91
Correspondence	—	244 50	—
Miscellaneous	—	84 41	—
Short Courses	—	—	19,361 50
Student fees	—	18,089 50	—
Winter School	—	1,272 00	—
Waltham Field Station	—	—	104 20
Produce	—	104 20	—
Feed Law	—	21,258 95	21,258 95
Fertilizer Law	—	15,269 99	15,269 99
Dairy Law	—	1,111 00	1,111 00
Poultry Disease Law	—	30,208 97	30,208 97
Seed Control Law	—	673 93	673 93
Laboratory Service	—	—	1,077 25
Bacteriology	—	781 25	—
Pathology	—	296 00	—
Treasurer of the Commonwealth	—	—	814,296 16
Maintenance	—	802,567 01	—
Special Appropriation	—	6,447 49	—
Endowment	3,151 66	—	—
Smith Hughes Fund	2,130 00	—	—

	Other Funds	State Funds	Totals
Federal Government	—	—	\$216,589 60
Land Grant of 1862	\$7,300 00	—	—
Hatch Fund of 1887	15,000 00	—	—
Morrill Fund of 1890	16,666 67	—	—
Adams Fund of 1906	15,000 00	—	—
Nelson Fund of 1907	16,666 66	—	—
Smith Lever Fund of 1914	54,086 39	—	—
Purnell Fund of 1925	60,000 00	—	—
Capper Ketchum Fund of 1928	23,869 88	—	—
Additional Federal Co-operative Fund	8,000 00	—	—
Bills paid by State Treasurer	—	\$198,079 77	198,079 77
	\$279,560 25	\$1,273,705 70	\$1,553,265 95

CASH STATEMENT

<i>Expenditures</i>	Other Funds	State Funds	Totals
College expenses	—	—	\$661,805 76
Personal Services	\$46,639 99	\$467,843 39	—
Maintenance	—	147,322 38	—
Replacements	—	9,697 92	9,697 92
Experiment Station	—	—	196,950 90
Personal Service	83,198 94	90,935 11	—
Maintenance	6,746 48	16,070 37	—
Extension Service	—	—	179,011 39
Personal Service	78,612 58	66,071 65	—
Maintenance	1,281 20	33,045 96	—
Short Courses	—	—	69,060 53
Personal Service	—	59,635 66	—
Maintenance	—	9,424 87	—
Waltham Field Station	—	—	10,871 28
Personal Service	—	4,575 33	—
Maintenance	—	6,295 95	—
Trustees Travel	—	1,299 03	1,299 03
Printing Reports	—	425 49	425 49
Feed Law	—	10,204 95	10,204 95
Fertilizer Law	—	14,392 13	14,392 13
Dairy Law	—	1,167 91	1,167 91
Poultry Disease Law	—	30,207 51	30,207 51
Seed Control Law	—	5,576 68	5,576 68
Laboratory Service	—	—	5,137 99
Bacteriology	—	2,755 89	—
Pathology	—	2,382 10	—
Special appropriations	—	—	26,798 88
1930 Building for Physical Education	—	10,344 04	—
1930 Remodeling North College	—	328 50	—
1930 Water Mains	—	2,647 65	—
1931 Timber and Forest Work	—	827 02	—
1931 Renewal of Steam Line	—	4,661 59	—
1931 Automatic Stoker	—	2,922 58	—
1932 Emergency Needs	—	1,000 00	—
1932 Renovation of Greenhouse	—	1,245 97	—
1932 Fisher Laboratory Improve- ments	—	1,326 63	—
1932 Repairs to Harlow House	—	1,494 87	—
Income	—	266,611 43	266,611 43
Refunds to State Treasurer	—	965 14	965 14
Balance	63,081 06	—	63,081 06
	\$279,560 25	\$1,273,705 70	\$1,553,265 95

COMPARATIVE RECEIPTS FOR FIVE YEARS ENDING NOVEMBER 30, 1932

	1928	1929	1930	1931	1932
Charges to Students	\$61,784 22	\$66,240 94	\$70,684 26	\$81,360 67	\$97,856 20
Personal Services and Retirement	1,189 61	1,065 53	1,412 60	1,831 94	1,479 26
Sales	69,473 16	70,827 73	64,927 98	63,502 90	66,101 68
Miscellaneous	7,287 90	8,190 63	7,382 31	6,950 90	4,797 88
Totals	\$139,734 89	\$146,324 83	\$144,407 15	\$153,646 41	\$170,235 02
Experiment Station	21,916 15	23,422 21	17,293 60	16,161 80	6,981 71
Laws	64,638 79	81,956 97	79,361 74	80,176 82	68,522 84
Service	476 05	1,252 10	1,039 13	998 25	1,077 25
Totals	\$87,030 99	\$106,631 28	\$97,694 47	\$97,336 87	\$76,581 80
Extension Service	816 33	824 81	769 56	479 08	328 91
Short Courses	16,343 71	17,796 80	17,875 75	19,791 25	19,361 50
Waltham Field Station	519 86	272 47	282 25	295 73	104 20
Grand Totals	\$244,445 78	\$271,850 19	\$261,029 18	\$271,549 34	\$266,611 43

COMPARATIVE EXPENDITURES FOR FIVE YEARS ENDING NOVEMBER 30, 1932

	1928	1929	1930	1931	1932
Administration	\$40,004 08	\$41,492 16	\$37,105 61	\$37,826 82	\$34,668 00
Instruction	209,809 67	226,785 53	232,457 39	242,989 15	249,050 88
Maintenance:					
Departmental	81,224 80	70,387 26	66,451 57	65,826 49	64,184 53
Farm	30,405 60	29,304 17	35,391 53	34,417 78	34,262 55
Operating	42,376 86	53,074 13	61,468 63	66,808 23	64,812 48
Repairs	20,655 59	21,859 57	24,345 07	22,965 94	20,864 95
Replacements	2,445 18	1,933 66	1,574 28	1,511 30	794 49
Travel	6,008 84	6,231 77	5,966 07	5,332 77	3,444 45
Supplies and Equipment	95,993 72	98,498 47	95,383 04	93,599 11	87,869 50
Heat, Light and Power	52,996 66	47,284 31	44,108 71	32,203 00	41,180 81
Farm	2,274 75	1,596 04	3,836 26	2,280 40	3,007 11
Repairs	16,366 68	20,215 60	27,254 86	21,045 73	17,834 73
Replacements	17,210 15	19,846 31	19,797 88	18,165 36	8,903 43
Printing Reports	295 87	1,150 59	1,137 42	2,013 70	425 49
Trustees' Expense	856 94	1,029 28	795 34	690 63	1,299 03
Totals	\$614,375 89	\$637,496 77	\$649,401 14	\$643,115 61	\$626,588 21
Experiment Station:					
Personal Service	79,046 01	78,180 76	83,336 12	86,722 64	90,935 11
Supplies and Equipment	16,797 99	18,050 75	18,986 16	17,143 22	14,345 88
Travel	2,146 78	2,461 02	2,735 59	2,669 17	1,724 49
Totals	\$97,990 78	\$98,692 53	\$105,057 87	\$106,535 03	\$107,005 48
Dairy Law:					
Personal Service	390 00	481 60	484 50	547 35	621 00
Travel	260 81	376 42	370 22	353 07	331 28
Supplies and Equipment	45 70	94 92	514 32	371 08	215 63
Sub-total	\$696 51	\$952 94	\$1,369 04	\$1,271 50	\$1,167 91
Feed Law:					
Personal Service	8,412 70	8,725 15	8,489 69	8,628 66	8,802 84
Travel	513 23	541 79	449 04	428 91	336 94
Supplies and Equipment	984 05	1,682 16	1,724 62	1,803 68	1,065 17
Sub-total	\$9,909 98	\$10,949 10	\$10,663 35	\$10,861 25	\$10,204 95
Fertilizer Law:					
Personal Service	10,255 69	10,890 56	10,954 90	11,222 84	11,092 33
Travel	1,160 85	1,214 97	955 96	1,163 15	841 86
Supplies and Equipment	2,056 85	1,701 99	2,699 14	2,636 02	2,457 94
Sub-total	\$13,473 39	\$13,807 52	\$14,610 00	\$15,022 01	\$14,392 13
Poultry Law:					
Personal Service	12,537 43	19,167 52	21,611 22	23,709 46	20,515 30
Travel	2,104 71	2,827 24	3,276 53	2,884 26	1,659 98
Supplies and Equipment	6,232 79	12,630 19	11,843 22	14,484 67	8,032 23
Sub-total	\$20,874 93	\$34,624 95	\$36,730 97	\$41,078 39	\$30,207 51

COMPARATIVE EXPENDITURES FOR FIVE YEARS ENDING
NOVEMBER 30, 1932—*Continued*

	1928	1929	1930	1931	1932
Seed Law:					
Personal Service . . .	\$3,636 75	\$3,734 14	\$3,354 80	\$3,800 24	\$4,506 04
Travel . . .	154 38	66 15	71 66	102 91	33 24
Supplies and Equipment . . .	848 69	898 11	1,647 01	1,262 10	1,037 40
Sub-total . . .	\$4,639 82	\$4,698 40	\$5,073 47	\$5,165 25	\$5,576 68
Laboratory Service:					
Personal Service . . .	2,106 67	4,939 20	5,010 22	5,325 00	4,900 57
Maintenance . . .	286 33	511 61	488 44	436 14	237 42
Sub-total . . .	\$2,393 00	\$5,450 81	\$5,498 66	\$5,761 14	\$5,137 99
Grand Total . . .	\$51,987 63	\$70,483 72	\$73,945 49	\$79,159 54	\$66,687 17
Extension Service:					
Personal Service . . .	\$55,537 99	\$58,849 83	\$65,899 79	\$67,384 00	\$66,071 65
Supplies and Equipment . . .	16,181 14	17,066 89	17,809 75	18,755 56	14,033 51
Travel . . .	20,244 84	20,248 28	21,608 12	23,334 12	19,012 45
Total . . .	\$91,963 97	\$96,165 00	\$105,317 66	\$109,473 68	\$99,117 61
Short Courses:					
Personal Service . . .	60,269 51	59,221 50	60,988 59	64,023 97	59,635 66
Travel . . .	1,558 26	1,624 45	1,461 94	1,552 54	1,193 34
Supplies and Equipment . . .	9,086 75	9,420 11	9,166 61	9,360 11	8,231 53
Total . . .	\$70,914 52	\$70,266 06	\$71,617 14	\$74,936 62	\$69,060 53
Waltham Field Station:					
Personal Service . . .	7,569 46	7,994 87	8,619 48	9,355 48	4,575 33
Maintenance . . .	5,133 93	4,889 72	6,561 60	6,902 36	6,295 95
Total . . .	\$12,703 39	\$12,884 59	\$15,181 08	\$16,257 84	\$10,871 28
Grand Totals . . .	\$939,936 18	\$985,988 67	\$1,020,520 38	\$1,029,478 32	\$979,330 28

COLLEGE BUILDINGS (ESTIMATED VALUE, 1932)

	Total Value at Close of Fiscal Year
Adams Hall	\$112,280 76
Agricultural Engineering Building	13,957 74
Apiary	2,580 80
Cashier's House	2,370 22
Chemistry Store House	41 59
Clark Hall and Greenhouse	57,389 46
Draper Hall	73,762 50
Drill Hall and Gun Shed	25,631 91
Durfee Glass House, old	12,455 62
Durfee Glass House, new	8,760 28
Farm Shop	317 87
Farm Bungalow No. 1	3,113 59
Farm Bungalow No. 2	3,661 06
Farm Bungalow No. 3	3,505 99
Farm Bungalow Garage	270 83
Farm Bull Pens and Fence	3,749 67
Farm Corn Cribs (7)	502 96
Farm Dairy Barns and Storage	25,842 45
Farm Horse Barn No. 1	4,608 77
Farm Horse Barn No. 2	4,862 00
Farm House	4,125 84
Farm Machinery Barn	3,004 83
Farm Piggery	2,259 59
Farm Sheep Barn	1,342 53
Farm Young Stock, including Isolation and Quarantine Barns	17,802 54
Fernald Hall	63,935 14

	Total Value at Close of Fiscal Year
Fisher Laboratory	\$24,488 32
Flint Laboratory	70,397 21
French Hall	46,230 75
Garage (6) Farm	2,641 42
Goessmann Laboratory	255,678 82
Grinnell Arena and Abattoir	19,842 64
Grounds Tool Shed	137 02
Harlow House	2,961 44
Harlow Storage Shed	1,250 00
Home Practice House for Girls	7,391 78
Horticultural Barn	4,330 34
Horticultural Garage	1,499 25
Horticultural Tool Shed	4,287 57
Horticultural Open Shed	320 97
Horticultural Manufactures Building	63,270 61
Horticultural Manufactures Shed	2,145 78
Hospital	16,411 97
Jewett House and Barn	2,783 64
Library	29,862 16
Lumber Shed	2,353 21
Mathematics Building	4,750 34
Memorial Hall	89,755 41
Microbiology Building	51,355 71
Military Storage	121 92
Mount Toby House and Barn	2,208 57
North Dormitory	52,569 26
Paige Laboratory and Stable	25,007 15
Physical Education Building	262,656 92
Physics Laboratory	8,012 34
Poultry Departments:	
No. 1, Demonstration Building	2,173 06
No. 2, Oil House	157 57
No. 3, Brooder, killing and fattening laboratory	2,854 57
No. 4, Mechanics Storage Building and incubator cellar	3,742 24
No. 5, Laying House	2,078 95
No. 6, Manure Shed	122 13
No. 7, Small Hen House	46 60
No. 8, Breeding House	1,220 54
No. 9, Experimental Breeding House	565 44
No. 10, Duck House	103 14
No. 11, Unit House for 200 hens	412 72
No. 12, Unit House for 100 hens	601 32
No. 13, Hot Water Brooder	1,877 16
Power Plant and Storage Building, including coal pocket	50,000 12
President's House	16,951 07
South Dormitory	47,468 69
Stockbridge Hall	151,039 11
Agronomy Greenhouse and Storage	4,246 02
Stockbridge House	1,509 32
Stable for Cavalry Unit	12,912 13
Blacksmith Shop	620 09
Storage Barn	2,587 22
Turbine House	15,822 95
Vegetable Plant House	4,547 63
Waltham Field Station:	
Greenhouse	24,535 56
Office and Laboratory	6,761 41
Farmhouse	4,857 97
Ice House	66 34
Hay Barn	3,186 88

Total Value
at Close of
Fiscal Year

Waltham Field Station — *continued.*

Garage	\$960 40
Small Stock Barn	1,338 27
Small Shed	567 97
Waiting Station	656 48
Waugh House	2,799 04
Wilder Hall	29,071 75
	\$1,905,320 92

EXPERIMENT STATION BUILDINGS (ESTIMATED VALUE, 1932)

Agricultural Laboratory	\$14,442 61
Agricultural Barn	5,324 92
Agricultural Farmhouse	6,614 15
Agricultural Glass House	737 86
Brooks House	2,740 82
Brooks Barn and Sheds	5,469 16
Brooks Tobacco Barn	1,992 62
Brooks Farm Garage	320 70
Cranberry Buildings:	
Laboratory	5,645 81
Garage	1,229 44
Shed (storage)	187 50
Pump House	121 29
Oil House	29 40
Entomological Glasshouse	371 55
Plant and Animal Chemical Laboratory	24,621 23
Plant and Animal Chemistry Barns	6,933 74
Plant and Animal Chemistry Barn annex	1,905 28
Six Poultry Houses	697 06
Tillson Cottage	1,259 98
Tillson Barn	692 34
Tillson Poultry Houses (4) Nos. 1, 2, 3, 4	2,577 27
Tillson Brooder No. 5	802 85
Tillson Hen Brooder No. 6	831 06
Tillson Summer Sheds (3) Nos. 7, 8, 9	309 67
Tillson Foreman's quarters and Incubator cellar No. 10	5,684 50
	\$91,542 81

COLLEGE EQUIPMENT (ESTIMATED VALUE)

Administrative Division:	
Dean's Office	\$2,847 50
President's Office	3,530 25
Treasurer's Office	4,771 75
Agricultural Division:	
Agricultural Engineering	8,219 67
Agronomy	11,307 33
Animal Husbandry	3,921 05
Dairy Industry	26,064 89
Farm, including Livestock	61,657 55
Farm Management	1,734 71
Freshman Agriculture	163 59
Poultry	5,719 05
Home Economics	9,263 31
Dining Hall	40,722 19
Extension Service	24,490 11

Total Value
at Close of
Fiscal Year

General Science:	
Bacteriology and Physiology	\$29,689 67
Botany	27,873 65
Chemistry	37,127 21
Entomology, Zoology and Geology (including Beekeeping)	32,840 74
Mathematics	2,064 85
Physics	14,026 75
Veterinary	13,437 54
Graduate School	379 85
Horticultural Division:	
Floriculture	11,221 23
Forestry	1,368 10
General Horticulture	5,818 68
Grounds	1,842 89
Horticultural Manufactures	11,479 60
Landscape Architecture	5,856 63
Mount Toby Reservation	71 88
Pomology	7,775 62
Vegetable Gardening	3,997 56
Waltham Field Station	4,322 85
Hospital	2,783 53
Language and Literature	876 06
Library	176,612 09
Memorial Hall	11,643 48
Military	1,946 00
Operating and Maintenance:	
College supplies	939 18
Janitor supplies	1,807 52
Fire apparatus	1,344 60
General Maintenance:	
Office	723 66
Carpentry and Masonry supplies	7,415 89
Carpentry and Masonry tools	4,444 08
Electric supplies	8,808 83
Electrical tools	489 81
Electrical supplies for Commencement	187 55
Heating and Plumbing supplies	15,627 55
Heating and Plumbing tools	2,968 92
Painting supplies	1,786 82
Painting tools	316 81
Gas Main	768 79
Steam Main	23,531 57
Lighting Lines	16,535 71
Sewer Lines	12,575 78
Water Main	18,393 35
Roads and Walks	42,186 17
Power Plant:	
General Equipment	74,467 03
Tools	718 08
Fuel	4,446 71
General Agriculture	2,986 17
North College	6,195 05
President's House	1,277 71
South College	2,015 00
Women's Dormitory	8,865 70
Furniture in storage	584 50
Physical Education	17,938 73
General Social Science:	
Agricultural Economics	2,229 73

Total Value
at Close of
Fiscal YearRural Social Science — *continued.*

Agricultural Education	\$2,251 10
Economics, History and Sociology	255 5
Short Courses	2,749 2
Social Union and Trophy Room and United Religious	694 5
Text Books	1,613 9
	\$899,610 8

EXPERIMENT STATION EQUIPMENT (ESTIMATED VALUE)

Agricultural Economics	\$495 9
Agricultural Engineering and Meteorological Observatory	1,209 1
Agricultural Laboratory	8,808 1
Bacteriology and Physiology	2,012 7
Botany	10,586 8
Cranberry Station	6,732 1
Director's Office	6,025 3
Entomological Laboratory and Apiary	26,327 4
Entomology at Waltham Field Station	505 0
Floriculture at Waltham Field Station	669 5
Feed and Fertilizer Law	11,625 7
Home Economics	1,216 2
P. & A Chemistry	16,217 0
Pomology	4,965 4
Poultry	5,606 8
Poultry Disease Law	36,873 4
Seed Control Law	3,020 1
Veterinary	2,546 9
Laboratory Service:	
Bacteriology	1,713 1
Pathology	300 6
	\$147,457 8

INVENTORY — REAL ESTATE LAND (ESTIMATED VALUE)

Angus Land	\$800 0
Allen Place	500 0
Baker Place	2,500 0
Bangs Place	2,350 0
Brooks Farm	11,000 0
Brown Land	500 0
Chambry Place	450 0
Clark Place	4,500 0
College Farm	37,000 0
Cranberry Land	16,300 0
George Cutler Trustee	2,700 0
Dickinson Land	7,850 0
Harlow Farm and Orchard	3,284 0
Hawley and Brown Place	675 0
Kellogg Place	3,368 0
Loomis Place	415 0
Mount Toby Demonstration Forest	30,000 0
Louisa Baker Place	5,000 0
Newall Farm	2,800 0
Old Creamery Place	1,000 0
Owen Farm	5,000 0
Pelham Quarry	500 0
Q. T. V. Land	12,000 0

	Total Value at Close of Fiscal Year
Tillson Farm	\$2,950 00
Waltham Field Station	21,000 00
Westcott Land	2,250 00
	\$176,693 08

College Estate (area)	705 59
Cranberry Station, E. Wareham (area)	28 36
Mount Toby Demonstration Forest (area)	755 27
Rifle Range	46 20
Pelham Quarry	50
Waltham Field Station, Waltham (area)	55 39

 1,591 31
Summary

Land	\$176,693 08
College Buildings	1,905,320 92
College Equipment	899,610 87
Experiment Station Buildings	91,542 81
Experiment Station Equipment	147,457 87
Total	\$3,220,625 55

DINING HALL STATEMENT NOVEMBER 30, 1932

Balance Dec. 1, 1931	\$19,135 41	
Less Dec. 1931 Board Paid Nov. 1931	410 40	
		\$18,725 01
Outstanding Accounts:		
Board		808 18
Special Service		99 46
Inventory Nov. 30, 1932		4,146 68
Total Collections	\$109,681 94	
Add 1932 Account received 1931	410 40	
	\$110,092 34	
Less 1933 Account received 1932	5,013 18	
		105,079 16
Total Disbursements	\$114,185 47	
Outstanding bills Nov. 30, 1932	6,282 43	
Balance	8,390 59	
	\$128,858 49	\$128,858 49

CONSOLIDATED ENDOWMENT FUNDS

Name and Description of Funds	Operation of Fund for the Year Ending Nov. 30, 1932	Balance to Credit Fund Nov. 30, 1932	
		<i>Income</i>	<i>Principal</i>
Alvord Dairy Scholarship — Gift of Henry E. Alvord (1914). Income used for graduate work in Dairy Industry.	<i>Receipts</i>		
	Balance Dec. 1, 1931	\$586 67	
	Income from investments	234 03	
		\$820 70	
	<i>Payments</i>		
D. K. Bangs Fund — Gift of Louisa A. Baker (1909). Income used as loan fund.	Expended for scholarships	578 00	
	Balance Nov. 30, 1932	242 70	
		820 70	
		\$242 70	\$4,000 00
	<i>Receipts</i>		
	Balance Dec. 1, 1931	2,838 48	
	Loans outstanding Dec. 1, 1931	4,449 64	
	Income from investment	325 00	
	Income from interest on loans	184 29	
		7,797 41	
	<i>Payments</i>		
	Loans made and outstand- ing Nov. 30, 1932	6,361 90	
	Balance Nov. 30, 1932	1,435 51	
		7,797 41	
		1,435 51	7,000 00
	<i>Receipts</i>		
	Income from investment	— 250 00	
	<i>Payments</i>		
	Transferred to Sessions Fd.	— 250 00	
		—	5,000 00
	<i>Receipts</i>		
	Balance Dec. 1, 1931	230 76	
	Income from investment	305 00	
		535 76	
	<i>Payments</i>		
	Expended under order of President	463 20	
	Balance Nov. 30, 1932	72 56	
		535 76	
		72 56	5,500 00
	<i>Receipts</i>		
	Balance Dec. 1, 1931	2,857 36	
	Income from investment	1,427 01	
		4,284 37	
	<i>Payments</i>		
	Expended for scholarships	1,540 00	
	Balance Nov. 30, 1932	2,744 37	
		4,284 37	
		2,744 37	25,250 00
	<i>Receipts</i>		
	Balance Dec. 1, 1931	11.13	
	Income from investment	50 00	
		61 13	
	<i>Payments</i>		
	Expended for Books on Hy- giene	60 92	
	Balance Nov. 30, 1932	21	
		61 13	
		21	1,000 00
	<i>Receipts</i>		
	Balance Dec. 1, 1931	416 26	
	Income from investment	465 00	
		881 26	
	<i>Payments</i>		
	Expended for student labor	475 60	
	Balance Nov. 30, 1932	405 66	
		881 26	
		405 66	9,000 00
	<i>Receipts</i>		
	Balance Dec. 1, 1931	1,365 62	
	Income from investment	574 03	
		1,939 65	
	<i>Payments</i>		
	Expended for student judg- ing trips	177 00	
	Balance Nov. 30, 1932	1,762 65	
		1,939 65	
		1,762 65	10,000 00
	<i>Receipts</i>		
	Balance Dec. 1, 1931	228 17	
	Income from investment	67 50	
		295 67	
	<i>Payments</i>		
	Balance Nov. 30, 1932	— 295 67	
		295 67	
		295 67	1,500 00

Name and Description of Funds	Operation of Fund for the Year ending Nov. 30, 1932		Balance to Credit Fund Nov. 30, 1932	
			Income	Principal
Chas. A. Gleason Fund — Gift of Chas. A. Gleason of No. Brookfield (1926). Income used as loan fund to students.	<i>Receipts</i>			
	Balance Dec. 1, 1931	\$1,241 57		
	Loans outstanding Dec. 1, 1931	125 00		
	Income from investment	275 00		
	Income from interest on loans	16 37		
		\$1,657 94		
	<i>Payments</i>			
	Loans made and outstanding Nov. 30, 1932	790 00		
	Balance Nov. 30, 1932	867 94		
		1,657 94	\$867 94	\$5,000 00
Grinnell Prize Fund — Gift of Hon. Wm. Claflin (1874). Income to be used as a prize fund and given to the two members of graduating class who pass best examination in theory and practice of agriculture.	<i>Receipts</i>			
	Balance Dec. 1, 1931	526 87		
	<i>Payments</i>			
	Expended for prizes	50 00		
	Balance Nov. 30, 1932	476 87		
		526 87	476 87	1,000 00
Hills Fund — Gift of Leonard M. and Henry Hills of Amherst (1867). Income to be used to establish and maintain a botanic garden. Botany — \$611 12 Hort. — 391 56	<i>Receipts</i>			
	Balance Dec. 1, 1931	837 63		
	Income from investment	837 54		
		1,675 17		
	<i>Payments</i>			
	Expended for Botany and Floriculture Dept.	1,002 68		
	Balance Nov. 30, 1932	672 49		
		1,675 17	672 49	16,114 75
Library Fund — (1883-1894) This fund raised by Alumni and others. Income is used to purchase books for Library.	<i>Receipts</i>			
	Balance Dec. 1, 1931	171 72		
	Income from investment	463 40		
		635 12		
	<i>Payments</i>			
	Expended for books for Library	504 39		
	Balance Nov. 30, 1932	130 73		
		635 12	130 73	10,375 52
M. S. C. Investment (1893). Investment made by vote of Trustees in 1893. Income of this fund is allowed to accumulate.	<i>Receipts</i>			
	Balance Dec. 1, 1931	— 131 76		
	<i>Payments</i>			
	Balance Nov. 30, 1932	— 131 76	131 76	500 00
Porter L. Newton Fund — Gift of Porter L. Newton of Waltham, Mass. (1926). Income to be used for scholarships.	<i>Receipts</i>			
	Balance Dec. 1, 1931	991 44		
	Income from investment	1,259 75		
		2,251 19		
	<i>Payments</i>			
	Expended for scholarships	1,300 00		
	Balance Nov. 30, 1932	951 19		
		2,251 19	951 19	23,411 33
Robert F. Pomeroy Library Fund — Gift of Ellen Pomeroy Moore (1928). Income to be used to purchase books for Horticulture and Landscape Arch. section of Library.	<i>Receipts</i>			
	Balance Dec. 1, 1931	80 12		
	Income from investment	75 00		
		155 12		
	<i>Payments</i>			
	Expended for books on Hort. and Land Arch.	83 05		
	Balance Nov. 30, 1932	72 07		
		155 12	72 07	1,500 00
Van Leon Pond Memorial Fund — Given by friends of the College to establish a fund the income of which to be used for the promotion of Athletics (1920).	<i>Receipts</i>			
	Income from investment	— 15 41		
	<i>Payments</i>			
	Expended for medal	— 15 41	—	744 78
Mary Robinson Fund (1874) — Gift of Mary Robinson of Medford. Income used for scholarships.	<i>Receipts</i>			
	Balance Dec. 1, 1931	393 10		
	Income from investment	55 23		
		448 33		
	<i>Payments</i>			
	Expended for scholarships	400 00		
	Balance Nov. 30, 1932	48 33		
		448 33	48 33	1,000 00

Name and Description of Funds	Operation of Fund for the Year Ending Nov. 30, 1932	Balance to Credit Fund Nov. 30, 1932	
		<i>Income</i>	<i>Principal</i>
Wm. R. Sessions Fund— Gift of Clara Markham Sessions (1918). Income used for the use of the col- lege as the trustees may direct.	<i>Receipts</i> Balance Dec. 1, 1931 . \$322 38 Income from investment . 480 00 \$802 38 <i>Payments</i> Expended under order of President . 121 56 Balance Nov. 30, 1932 . 680 82	802 38	\$680 82 \$5,000 00
Betty Steinbugler Fund— Gift of John L. Steinbug- ler (1930), as a prize for best essay in English writ- ten by a junior or senior girl.	<i>Receipts</i> Income from investment . - 10 00 <i>Payments</i> Expended for prize . - 10 00	10 00	- 200 00
Whiting Street Scholarship Fund—Gift of Whiting Street of Northampton, Mass. (1879). Income used for scholarships.	<i>Receipts</i> Balance Dec. 1, 1931 . 337 06 Income from investment . 100 00 437 06 <i>Payments</i> Expended for scholarships . 340 00 Balance Nov. 30, 1932 . 97 06 437 06	97 06	2,000 00
Helen A. Whittier Scholar- ship Fund—Given by Mass. State Federation of Women's Clubs (1929). Income to be used for scholarships in art as ap- plied to living.	<i>Receipts</i> Balance Dec. 1, 1931 . 170 28 Income from investment . 186 28 356 56 <i>Payments</i> Expended for scholarships . 150 02 Balance Nov. 30, 1932 . 206 54 356 56	206 54	3,193 4
		\$11,295 13	\$138,289 8

TRUST ACCOUNT

Massachusetts State College — Student Loan Fund

	Market Value Dec. 1, 1932	Par Value	Income
Total amount of gift	\$500 00	\$500 00	-
Total loans	-	480 00	-
Amount available for loans	-	\$20 00	-
Unexpended balance Dec. 1, 1931	-	-	\$89 7
Interest from loans	-	-	5 1
	-	-	\$94 8

4-H Club for Boys

	Market Value Dec. 1, 1932	Par Value	Income
Total amount of gift	\$1,000 00	\$1,000 00	-
Total loans	-	275 00	-
Amount available for loans	-	\$725 00	-
Unexpended balance Dec. 1, 1931	-	-	\$54 8
Interest from loans and Savings Bank	-	-	34 8
	-	-	\$88 9

4-H Club for Girls

	Market Value Dec. 1, 1932	Par Value	Income
Total amount of gift	\$150 00	\$100 00	-
Additional gift	-	35 00	-
Accumulated interest	-	16 45	-
Total loan	-	\$151 45	-
Balance on hand	-	-	\$1 9

Vincent Goldthwait Loan

	Market Value Dec. 1, 1932	Par Value	Income
Total amount of gift	\$5,175 00	\$5,175 00	-
Additional notes received from Dr. Goldthwait	-	275 00	-
Total amount	-	\$5,450 00	-
Total loans	-	3,585 25	-
Amount available for loans	-	\$1,864 75	-
Accumulated interest	-	28 25	-
Balance on hand	-	-	\$1,893 4

Summary

	Market Value Dec. 1, 1932	Par Value	Income
M. S. C. Club — Student Loan Fund	—	\$114 88	—
4-H Club for Boys	—	813 98	—
4-H Club for Girls	—	1 45	—
Vincent Goldthwait Loan	—	1,893 00	—
	—	\$2,823 31	—

Outstanding Notes

M. S. C. Club	\$480 00
4-H Club for Boys	275 00
4-H Club for Girls	150 00
Vincent Goldthwait	3,485 25
	\$4,390 25

ENDOWMENT FUNDS

Stocks or Bonds	Name	Int. Rate	Par Value	Cost	Market Value Dec. 1, 1932	Income
	Amherst Savings Bank	4½	\$2,189 83	\$2,189 83	\$2,189 83	\$145 18
30	Amherst Water Co.	6	100 00	3,000 00	3,000 00	180 00
4	Boston & Albany stock	—	100 00	400 00	388 00	35 00
8	Brown Company	5½	1,000 00	7,880 00	2,080 00	440 00
4	Cities Serv. Power & Light	5½	1,000 00	3,870 00	1,550 00	220 00
5	Florida Power & Light Co.	5	1,000 00	4,875 00	3,050 00	250 00
5	Florida Power Corp.	5½	1,000 00	4,700 00	2,950 00	275 00
1	Gatineau Power	5	1,000 00	927 50	610 00	50 00
1½	Indiana Hydro Elec. Power	5	1,000 00	1,477 50	990 00	75 00
5	Indianapolis Water Works Securities	5	1,000 00	4,962 50	3,500 00	250 00
4	Illinois Power & Light Corporation	5	1,000 00	3,840 00	2,600 00	200 00
5	Illinois Power & Light Corp.	5½	1,000 00	5,137 50	3,350 00	275 00
6	Illinois Power & Light Corporation	6	1,000 00	5,960 00	4,200 00	360 00
5	Monongahela West Penn Public Service	5½	1,000 00	4,950 00	3,400 00	275 00
5	N. Eng. Power Ass'n.	5½	1,000 00	4,900 00	3,000 00	275 00
1	New York Central	4	1,000 00	982 50	600 00	40 00
9	New York Central	4	1,000 00	9,000 00	5,940 00	360 00
22	New York Central Stock	—	100 00	2,200 00	470 25	—
4	Northern New York Utilities	6	1,000 00	4,000 00	3,720 00	240 00
5	Oklahoma Gas & Elec. Co.	6	1,000 00	4,925 00	3,650 00	300 00
6	Pacific Telephone & Tel.	5	1,000 00	5,886 25	6,300 00	300 00
1	Power Corp. of New York	5½	1,000 00	985 00	680 00	55 00
4	Power Corp. of New York	6½	1,000 00	4,000 00	3,720 00	260 00
2	Prudence Bonds Corp.	5½	1,000 00	2,000 00	1,300 00	110 00
7	Prudence & Company	5½	1,000 00	6,970 00	3,430 00	385 00
5	Puget Sound Power & Light	5½	1,000 00	5,050 00	3,350 00	275 00
10	Scranton Spring Brook Water Service	5	1,000 00	9,450 00	7,100 00	500 00
3	State & Washington Bldgs.	5	1,000 00	2,940 00	480 00	75 00
5	Texas-Louisiana Power Co.	6	1,000 00	4,975 00	1,100 00	300 00
3	Texas Power & Light	5	1,000 00	2,910 00	2,400 00	150 00
2	Union Elec. Light & Power	5	1,000 00	1,980 00	2,000 00	100 00
5	Virginia Elec. & Power Co.	5	1,000 00	4,825 00	4,750 00	250 00
4	Wichita Water Co.	5	1,000 00	3,800 00	3,240 00	200 00
	Barber Fund transfer	—	—	—	—	250 00
	Interest from Loans	—	—	—	—	200 66
			\$138,289 83	\$135,948 58	\$91,088 08	\$7,655 84

I hereby certify that I have this day examined the Massachusetts State College account, as reported by the Treasurer, Fred C. Kenney, for the year ending November 30, 1932. All bonds and investments are as represented in the Treasurer's report. All disbursements are properly vouched for, and all cash balances are found to be correct.

FRANK GERRETT,
Auditor.

STATISTICS

TABLE I. — NEW APPOINTMENTS

A. In the Academic Departments

Instructor in Botany: Carrolle E. Anderson, B.S., Massachusetts State College, 1932.

President: Hugh P. Baker, B.S., Michigan State College, 1901; M.F., Yale, 1904; D.Oec., University of Munich, 1910.

Professor of Psychology: Harry R. DeSilva, A.B., University of Florida, 1920; Ph.D., Harvard, 1927; D. Phil., Cambridge University, 1928.

Assistant Professor of Chemistry: Richard W. Fessenden, B.S., Massachusetts Agricultural College, 1926; M.S., 1928.
 Assistant Professor of Modern Languages: Charles F. Fraker, A.B., Colorado College, 1919; A.M., Harvard, 1920; Ph.D., 1931.
 Junior Clerk and Stenographer, Treasurer's Office: Mrs. Grace Gardner.
 Assistant Professor of Entomology and Beekeeping: Claude R. Kellogg, A.B., University of Denver, 1909; M.A., University of Wisconsin, 1918.
 Junior Clerk and Stenographer, President's Office: Dorothy G. Lyman, A.B., Mt. Holyoke, 1931.

B. In the Extension Service

Assistant State Leader of County Club Agents: Tena Bishop, B.S., Framingham Normal, 1931.
 Junior Clerk and Stenographer, Department of Animal Husbandry: Jean M. Doleva.
 Senior Clerk and Stenographer: Mary C. Powers.

TABLE II. — SPEAKERS FOR THE YEAR

A. Assembly

1931

Dec. 2. Dr. George E. Vincent, Former President, Rockefeller Foundation.

1932

Jan. 6. Mr. Walter A. Dyer, Amherst, Mass.
 Mar. 2. Dean Maximo M. Kalaw, University of the Philippines.
 Apr. 27. Dr. J. Duncan Spaeth, Princeton University, Phi Kappa Phi Assembly.
 May 4. Burnham Declamation Contest.
 June 1. George Washington Bicentennial Celebration Prize Speaking Contest.
 Sept. 21. Dean William L. Machmer, M.S.C.
 Oct. 5. Professor Frank Prentice Rand, M.S.C.
 Nov. 2. Professor Theodore Collier, Brown University.

B. Sunday Chapel

1931

Dec. 6. Rev. Jay T. Stocking, Pilgrim Congregational Church, St. Louis, Mo.
 Dec. 13. Rev. W. Russell Bowie, Grace Church, New York City.

1932

Jan. 10. Dr. Milo H. Gates, Dean, Cathedral of St. John the Divine, New York City.
 Jan. 17. Rev. Reinhold Niebuhr, Union Theological Seminary, New York City.
 Jan. 24. President Paul D. Moody, Middlebury College, Middlebury, Vt.
 Jan. 31. Dean Shailer Mathews, Divinity School, Chicago University.
 Feb. 7. President Robbins W. Barstow, Hartford Theological Seminary.
 Feb. 14. President J. Edgar Park, Wheaton College, Norton, Mass.
 Feb. 28. Rev. Hilda L. Ives, Massachusetts Federation of Churches.
 Mar. 6. Rev. Everett R. Clinchy, National Conference of Jews and Christians.
 Mar. 13. President Albert W. Beaven, Colgate-Rochester Divinity School.
 Oct. 30. Professor William Lyon Phelps, Yale University.
 Nov. 6. Rev. James Gordon Gilkey, South Congregational Church, Springfield, Mass.
 Nov. 20. Rev. Bernard C. Clausen, First Baptist Church, Syracuse, N. Y.

TABLE III. — ATTENDANCE

	REGISTRATION NOV. 1, 1931			REGISTRATION NOV. 1, 1932		
	Men	Women	Total	Men	Women	Total
<i>A. In the Work of College Grade</i>						
Graduate Students	87	21	108	98	29	127
Senior Class	97	30	127	96	30	126
Junior Class	102	30	132	126	43	169
Sophomore Class	144	50	194	181	67	248
Freshman Class	220	84	304	225	84	309
Special Students	2	1	3	—	1	1
Totals	652	216	868	726	254	980

TABLE III. — ATTENDANCE. — *continued.*

	REGISTRATION NOV. 1, 1931			REGISTRATION NOV. 1, 1932		
	Men	Women	Total	Men	Women	Total
<i>B. Stockbridge School</i>						
Second year	106	7	113	109	5	114
First year	153	5	158	119	5	124
Special Students	2	—	2	4	—	4
Totals	261	12	273	232	10	242
<i>C. Short Course Enrollment</i>						
Winter School	82	4	86	90	3	93
Summer School	84	93	177	—	—	—
Totals	166	97	263	90	3	93

<i>D. Educational Meetings</i>	1931	1932
Adult Leaders in Food Preservation	118	—
Agricultural Teachers and Principals of High Schools	—	75
Allard Dairy Group	—	30
Amherst Garden Club	50	—
Annual Extension Service Conference	—	100
Apple Spray Conference	15	—
Camp Gilbert (4-H Club members and leaders)	170	115
Camp Middlesex	—	80
Columbia University Foreign Students	32	25
Conference on Homemaking	—	200
Connecticut Valley Day	600	600
Dad's Day	—	295
Dramatics School	—	40
English Folk Dance School	125	120
Extension Home Economics Conference	30	30
Fall Horticultural Exhibition	1,800	7,000
Farm and Home Week	4,000	4,200
Field Day at Waltham Field Station	860	862
4-H Canning Group	32	—
4-H Canning and Garden Leaders	30	—
4-H Club Agents' Conference	30	—
4-H Dairy Day	110	95
4-H Garden Club, Waltham Field Station	70	—
4-H Hampshire County Leaders' Conferences	—	30
4-H Hampshire County Canning Leaders	—	60
4-H Leaders Training School	30	—
4-H Sewing Contest	30	30
Florists School at Waltham Field Station	140	225
Greenkeepers' Exhibition	400	—
Hampshire County Adult Canning Leaders	—	44
High School Day	510	523
Home Gardeners' School, at Waltham Field Station	657	873
Institute of Rural Electricity	—	126
International Poultry Science Association	—	196
Interscholastic Judging Contests	250	236
Massachusetts Home Economics Association	40	—
Massachusetts Veterinary Association	27	37
Meat Cutters' School	10	25
Middlesex County 4-H Club Champions	110	75
Mt. Holyoke College Student Groups	25	60
New England Plant Pathologists	36	—
Norfolk & Plymouth County Poultrymen	70	—
Northampton Florists' and Gardeners' Club	20	—
Parent-Teachers Association Conference	—	20
Pasture Field Day	136	—

D. Educational Meetings — continued.

	1931	1930
Plymouth County 4-H Group	30	4
Poultry Breeders' Conference	100	0
Pullorum Disease Laboratory Workers' Conference	34	
Secondary School Principals' Conference	600	7
Small High School Basketball Tournament	5,000	10,1
Small High School Spring Relays	500	30
Small High School Track Meet	—	30
Smith College Training Class	—	0
State Engineers	60	
Three County Fruit Meeting	120	1
Western Mass. Basketball Coaches' Club	60	0
Young Farmers Club of Connecticut	—	0
Total	17,067	28.3

TABLE IV. — STATISTICS OF FRESHMEN ENTERING IN SEPTEMBER, 1932

A. Home Addresses of Students (Classified by Towns and Cities)

Acushnet	1	Hardwick	1	PORTLAND, ME.	
Adams	2	Hatfield	1	QUINCY	
Agawam	1	HAVERHILL	1	Reading	
Amesbury	1	Hingham	1	Rehoboth	
Amherst	11	Holden	2	REVERE	
Andover	2	HOLYOKE	11	Rowley	
Arlington	2	Hudson	1	Rutland	
Ashfield	2	Ipswich	1	Sandwich	
Athol	3	Kingston	1	SCHENECTADY, N. Y.	
Barre	3	Lancaster	1	Sharon	
Bedford	1	LAWRENCE	3	Sheffield	
Belchertown	4	Lee	3	Sherborn	
Belmont	5	Leverett	1	Shiloh, N. J.	
Blackstone	1	Lexington	1	Shrewsbury	
Boonton, N. J.	1	Littleton	4	Shutesbury	
BOSTON	21	LOWELL	1	SOMERVILLE	
Bourne	1	Ludlow	1	Southbridge	
Braintree	1	Lunenburg	2	Southfield	
BROCKTON	1	LYNN	2	South Hadley	
Brookline	2	MALDEN	1	Southwick	
CAMBRIDGE	2	Maynard	4	SPRINGFIELD	
Charlemont	2	MEDFORD	5	Stafford Springs, Conn.	
CHELSEA	3	MELROSE	3	Stanley, Wis.	
Chester	2	Merrimac	1	Stockbridge	
Colrain	1	Methuen	2	Stoneham	
Conway	2	Middleborough	1	Suffield, Conn.	
Dalton	3	Milford	2	Sunderland	
Dana	1	Millis	1	TAUNTON	
Danvers	1	Milton, N. Y.	1	Tolland	
Dedham	1	Monson	4	Torrington, Conn.	
Deerfield	3	Montague	3	Walpole	
Dover	1	Needham	2	Ware	
Easthampton	7	New Salem	1	Watertown	
East Moriches, N. Y.	1	NEWTON	1	Wenham	
EVERETT	1	NEW YORK, N. Y.	1	Westborough	
Falmouth	1	NORTH ADAMS	2	WESTFIELD	
Florida	1	NORTHAMPTON	11	Westminster	
Foxborough	1	Northborough	1	West Springfield	
Framingham	1	Norwood	2	Weymouth	
Franklin	2	Oak Bluffs	1	Williamsburg	
GARDNER	4	Orleans	1	Winchester	
Grafton	1	Oxford	1	Winthrop	
Great Barrington	2	Palmer	3	WORCESTER	
Greenfield	6	PEABODY	1	Wrentham	
Hanson	1	PITTSFIELD	3		

B. Home Addresses (classified by States and Countries)

	Number	Per Cent		Number	Per Cent
Connecticut	3	.97	New Jersey	2	.6
Maine	1	.32	New York	4	1.3
Massachusetts	298	96.44	Wisconsin	1	.3
				309	100.0

C. Home Addresses (classified by Counties of Massachusetts)

	Number	Per Cent		Number	Per Cent
Barnstable	4	1.34	Hampshire	44	14.77
Berkshire	20	6.71	Middlesex	39	13.09
Bristol	4	1.34	Norfolk	21	7.05
Dukes	1	.34	Plymouth	5	1.68
Essex	17	5.70	Suffolk	33	11.07
Franklin	24	8.05	Worcester	41	13.76
Hampden	45	15.10			
				298	100.00

D. Nativity of Parents

	Number	Per Cent
Neither parent foreign born	184	59.55
Both parents foreign born	61	19.74
Father (only) foreign born	43	13.92
Mother (only) foreign born	21	6.79
	309	100.00

E. Education of Father

	Number	Per Cent
Common School	143	46.28
High School	88	28.48
Business College	21	6.80
College or University	44	14.24
No statistics	13	4.20
	309	100.00

F. Occupation of Father

	Number	Per Cent
Agriculture and Horticulture	49	15.86
Artisans	73	23.62
Business	71	22.98
Professional	28	9.06
Miscellaneous	60	19.42
Retired	3	.97
Deceased	16	5.18
No statistics	9	2.91
	309	100.00

G. Intended Vocation of Students

	Men	Women	Total	Per Cent
• Farming, including Market Gardening, Nursery business, Florist's business, Fruit Growing, Management of Estates, General Farming, Poultry Husbandry, Livestock Breeding, etc.	19	1	20	6.47
• Agricultural Business, including sales of agricultural products and other capacities such as the fertilizer industry, the feed industry, etc.	—	—	—	—
• Science, including Chemistry, Botany, Entomology, Bacteriology, etc., in such capacities as research experts, laboratory assistants, technologists	61	17	78	25.24
• Landscape Architects, Agricultural Engineers, and Foresters	23	3	26	8.41
• Teachers, including College Professors, High School Instructors, Specialists in Extension Education, etc.	13	22	35	11.33
• Professional Practitioners, including Physicians, Surgeons, Dentists, Lawyers, Veterinarians, Ministers, etc.	46	3	49	15.86
• Civil Engineers	2	—	2	.64
• Industrial Enterprises, including Manufacturing, Merchandising, Advertising, Banking, Accounting, Real Estate, Insurance, etc.	6	1	7	2.27
• Authors, Artists, Journalists, etc.	—	—	—	—
• Home Economics	—	22	22	7.12
• Social Service	7	7	14	4.54
• Undecided	48	8	56	18.12
	225	84	309	100.00

H. Farm Experience

	Men	Women	Total	Per Cent
Brought up on a farm	34	21	55	17.80
Not brought up on a farm and having no or practically no farm experience	151	57	208	67.31
Not brought up on a farm but having had some farm experience	40	6	46	14.89
	225	84	309	100.00

I. Miscellaneous Statistics

Average age (years)	18.5
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THE M. S. C. BULLETIN

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Announcement of Undergraduate Degree Courses For the Sessions of 1933-34



MASSACHUSETTS STATE COLLEGE

This issue of The Bulletin contains an extract from the catalogue of the College for the sessions of 1933-34. Herein are contained general information concerning the College, information about requirements for admission to the four-year degree course and the description of courses.

GENERAL INFORMATION.

HISTORICAL SKETCH.

One of the outstanding achievements of the middle of the nineteenth century was the remarkable development in the field of science. This, in turn, brought about great changes in industry, transportation and agriculture and stimulated the desire for new information and further training. People were enthusiastic about the possibilities of the future. It is not surprising, therefore, that scientific courses gradually found their way into the academies and colleges. This was not without opposition from the friends of the old classical training, however. In many instances institutions founded along literary and philosophical lines did not favor the introduction of courses based on the needs of students desiring to perfect themselves in the technical principles and practices of the arts and industry. The demand for such courses increased nevertheless. It was evident that the old order of education was changing but at the time the new was not apparent. It was under such conditions that the Massachusetts State College had its birth.

THE MORRILL ACT.

This demand for technical education finally crystallized into a bill before Congress known as the Morrill Act of 1862 endowing colleges for this purpose in every state of the Union. The original bill was framed by Senator Justin L. Morrill of Vermont and its final enactment obtained under his leadership. This bill provided in each state for "the endowment for and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanics arts in such manner as the legislatures of the states may respectively prescribe in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." Massachusetts accepted the provisions of the Morrill Act in 1863 by founding a new college at Amherst to be known as "Massachusetts Agricultural College" and Chapter 75 of the General Laws of the Commonwealth states that "the leading object of the College shall be to teach subjects relating to agriculture and the mechanics arts so as to promote liberal and practical education. Its curriculum may include other scientific and classical studies and shall include military tactics."

FOUNDING AND EARLY GROWTH OF THE COLLEGE.

The Trustees of the Massachusetts Agricultural College were incorporated in 1863 and officers were appointed in that year. It was not until October 2, 1867, however, that the institution at Amherst was formally opened to students. At that time there were four teachers on the faculty and four wooden buildings on the campus. The number of students steadily increased during the first term and by December, 1867, forty-seven had been admitted. From this modest beginning the College has grown steadily and its influence has been felt in many parts of the world. On April 15, 1931, the name of the institution was changed by legislative enactment to Massachusetts State College.

SCOPE OF THE INSTITUTION.

In a sense, experimental work is as old as the institution, for during its earliest years some very important investigations were carried on by the instructors. Research work was established as a separate unit, however, in 1882, when the State provided for the establishment of an agricultural experiment station here. In 1887 another experimental unit, the Hatch Experiment Station, was provided by Federal appropriation. These two stations were combined in 1895 and have since been known as the Massachusetts Agricultural Experiment Station.

State law also provides for the maintenance at this College of a Contro Service the purpose of which is to regulate the sale of certain agricultural products for the protection of purchasers and also to eliminate certain diseases of poultry.

The Extension Service of the College was established in 1912 and was first

supported by grants of Federal Funds in 1914. This division of the College undertakes the large responsibility of teaching adults and boys and girls throughout the State, who cannot come to the College for instruction, better methods in agriculture and home-making. Approximately 285,000 people in the Commonwealth received help in 1930 through this Extension Service.

RESIDENT INSTRUCTION.

Opportunities for resident instruction have greatly expanded since the founding of the College in 1863. The courses offered now include such short courses as the Winter School, Summer School, and the two-year course in practical agriculture known as the Stockbridge School. Then, there are the four-year course leading to the Bachelor of Science degree and the Graduate School which offers opportunity for study for advanced degrees. The undergraduate curriculum leading to the Bachelor of Science degree offers opportunity for specialization in Agriculture, Home Economics, Horticulture, Landscape Architecture, Physical and Biological Sciences and Social Sciences. The curriculum includes strong supporting courses in the Humanities and the aim is to give to each student as high a degree of efficiency in some particular branch of learning as is possible without sacrificing the breadth of knowledge and training which should characterize the well-rounded college course.

VOCATIONS OF GRADUATES.

The vocations in which the majority of graduates of the College are engaged give an idea of the sort of training which is provided. The largest number are serving as teachers in schools and colleges or as specialists in Extension education. The various phases of agriculture attract the next largest number and others listed in order are industrial workers, landscape architects and engineers, research experts and technologists in such scientific fields as chemistry, botany, entomology, bacteriology, etc.; professional practitioners such as physicians, lawyers, ministers, and a wide variety of miscellaneous callings.

PRESIDENT'S STATEMENT.

In connection with the dedication of the Physical Education Building, President Thatcher made the following statement concerning the type of education offered at this College: "The type of education which this College offers deals largely with the physical phenomena of the universe and of human life. This is the so-called 'scientific' training. When carried to extremes of application, it becomes 'industrial' or 'vocational' education; but when combined with a proper study of human social relationships, it is 'education for citizenship.'

"A state-supported college like ours should, of course, do all that it can to increase the capacity of its students for enjoyment of life and for participation in society, but its chief duty is to prepare its students to contribute to the physical welfare and the development of material prosperity of the state and nation which provide the facilities for this type of education.

"A college course at such an institution must provide for intellectual development as well as for the acquirement of skilled knowledge of the physical facts of science by its students. And it ought also to give them sound bodies and correct habits of physical life, in order that they may have adequate health and strength to carry an active share in the work of the world. It may properly go even so far as to encourage in its students the habit to 'play the game' of life in accordance with established rules and in the spirit of true sportsmanship, which seeks to win for oneself at the same time that every rightful opportunity is given to others."

"Our ideal in education then is to prepare our students for citizenship by giving them a trained mind, a useful knowledge of the principles of science and the facts of the physical universe, a healthy body and correct habits of physical life, and a keen sense of one's duties to and relationships with others. 'A sound mind in a healthy body' is what we hope will result from a course of training at Massachusetts State College."

THE COLLEGE CAMPUS.

Hand in hand with this steady growth of the College, there has come a marked expansion in physical equipment. The original farm of 1867, with its run-down

fields and degenerated apple orchards cut up here and there by old Virginia rail fences and hedge rows has metamorphosed into one of the most attractive college campuses in New England. A brief statement of land, buildings and equipment will show to what extent the original four wooden buildings have been out-grown.

LOCATION AND LANDS.

The State College is located in Amherst, a town of about six thousand people, overlooking one of the most picturesque sections of the Connecticut Valley. From the standpoint of teaching material in the field of science and agriculture, the location is ideal. Amherst is ninety-seven miles from Boston and may be reached by the Central Vermont Railroad, or by electric cars or bus connections from Northampton, Holyoke, and Springfield. The campus consists of a tract of approximately seven hundred acres, lying about a mile north of the village center. In addition the college owns another area of seven hundred and fifty-five acres located about six miles north of the campus on Mount Toby. This is used for a demonstration forest.

BUILDINGS AND EQUIPMENT.

The campus is laid out in the form of an oval attractively set off by the college pond in the center. Around this oval are grouped the main buildings of the college. In the following list the buildings are presented in order about this oval.

South College.—Here are located the administrative offices, including the offices of the President, Dean, Treasurer, Secretary, the Extension Service, Short Courses, and Women's Adviser. The Department of Agricultural Economics also has offices here. The west wing is used as a freshman dormitory. This accommodates about forty students. Erected 1885.

North College.—This has been recently remodelled as a freshman dormitory accommodating about seventy-five men students. A large living room serves as the center of freshman social life on the campus. North College was erected in 1867.

Flint Laboratory.—The work in Dairy Industry is carried on here. The building is well equipped with modern machinery for the production of market milk, ice-cream, butter and cheese. This building was erected in 1911 and was named in honor of Charles L. Flint, fourth president of the college.

Stockbridge Hall.—Here are located the departments of Agronomy, Animal Husbandry, Agricultural Engineering, Farm Management, Poultry Husbandry, Education and English. In addition to the lecture rooms and offices are laboratories for soil fertility, field crops, poultry, and a drafting room for engineering. The clothing and house furnishing laboratories for the Home Economics Department are also located here. In the rear of the building are the greenhouse and head house used by the Department of Agronomy for work with crops and soils. A special reference library for the Division of Agriculture is on the second floor. Bowker Auditorium, the largest auditorium on the campus, is also in this building. It has a seating capacity of nine hundred and is named in honor of William H. Bowker, a member of the first graduating class, later a Trustee of the College, and one of the pioneers in the fertilizer industry. Stockbridge Hall was erected in 1914 and named in honor of Levi Stockbridge, a former president and professor of Agriculture in the college.

Horticultural Manufactures Laboratory.—Erected in 1929. Both research and instructional work in food preservation are carried on here. The laboratories are well equipped with modern apparatus used in this rapidly developing field.

Grinnell Arena.—Erected in 1910 primarily for livestock judging. An abattoir was constructed in 1930 as an addition to the original building. Named in honor of James S. Grinnell, for twenty-two years a trustee of the College.

Agricultural Engineering Laboratory.—Included in this laboratory for students of Agricultural Engineering, are a carpenter shop, general repair shop and a laboratory for farm machinery and motors. The building was erected in 1916.

Draper Hall.—The college dining hall is located here. Service is by cafeteria style and there are seating accommodations for about four hundred and fifty a

one time. There is a small banquet room on the second floor and several dormitory rooms. Erected 1902 and subsequently, and named in honor of James Draper, for twenty years a trustee of the college.

Goessmann Laboratory.—This is a modern chemical laboratory. The building is approximately two hundred feet by eighty feet and contains eight large laboratory rooms, an auditorium, a chemical library, and lecture rooms. The east wing of the third floor is occupied by the research professors in Chemistry of the Experiment Station. In addition to the work in Chemistry the class work in German is held in this building. Goessmann Laboratory was erected in 1924 and named in honor of Charles A. Goessmann, the first professor of Chemistry at the college.

West Experiment Station.—The state control work is centralized here. Fertilizers, seeds, and feeds are analyzed or inspected in accordance with the state law, to determine whether or not they meet their guarantee. Erected 1886.

East Experiment Station.—The office of the Director of the Experiment Station and other administrative offices of the Experiment Station are located in this building.

Abigail Adams House.—This is a modern girls' dormitory accommodating about one hundred students. It was erected in 1919 and named for Abigail Adams, a staunch believer in farm life, the wife of John Adams, second President of the United States. In the rear of the building is a large athletic field used in connection with the physical training of the women students.

The Homestead.—Girls majoring in Home Economics receive their Home Management practice in the Homestead. It is a remodelled colonial farmhouse newly equipped with all the modern conveniences of the home.

Bacteriology and Physiology Laboratory.—This building, erected in 1915, is especially designed to carry on work in Bacteriology as it relates to soil, industry, dairying, foods and public health. There are four class laboratories, several private laboratory rooms and offices and a lecture room. In addition there are incubator rooms, sterilizing rooms, hood rooms, washing rooms, inoculating rooms, weighing rooms, an animal room, a photographic and dark room, and a sub-basement refrigerator room. There is also a well-equipped library containing books and current periodicals useful in the conduct of bacteriological and physiological study.

Infirmiry.—The Infirmary consists of two small cottages on the hillside east of the Bacteriology Laboratory. They are especially designed to care for sick or injured students. A trained nurse is on duty at all times.

Physics Building.—This is a wooden building erected in 1867. It contains a well-equipped laboratory for work in college Physics and also one lecture room.

Wilder Hall.—Here are located the departments for Landscape Architecture and Horticulture. The building is chiefly devoted to classrooms, drafting rooms, and offices. It was erected in 1905 and named in honor of Marshall P. Wilder, a pioneer in the movement for agricultural education in Massachusetts and one of the first trustees of the college.

Fisher Laboratory.—This is a well planned and equipped fruit packing and storage house. It includes six refrigerator rooms, four storage rooms not refrigerated, one large laboratory room, one class room besides ample storage space for fruit packages and equipment. The equipment for the building itself includes four types of apple sizers, packing tables and box and barrel presses of various types, besides all kinds of packages with smaller equipment necessary for thoroughly modern work in grading and packing fruit. This building is used by the Pomology Department and was named in honor of Jabez Fisher, one of the foremost, early horticulturists of the State. Erected 1910. Just east of Fisher Laboratory is the Horticultural Manufactures shed containing equipment for making cider, vinegar, and maple syrup.

French Hall.—French Hall houses the departments of Pomology, Floriculture, Forestry and Vegetable Gardening. The classroom work in Economics, Sociology, French and Spanish is also given here. Just to the rear of the building is the new Durfee range of greenhouses, devoted to the growing of carnations, roses, chrysanthemums, violets, etc. One house is maintained as a conservatory and contains a collection of plants used primarily for decorative purposes. An-

other house is devoted to greenhouse vegetables. The old Durfee range located just to the north of French Hall is used chiefly for the growing and maintenance of a collection of conservatory plants. There are also many of economic value such as the bamboo, camphor tree, guava, palm, etc. French Hall was erected in two sections; the first in 1908, the second in 1913. It was named in honor of Henry S. French, the first president of the college.

Clark Hall.—Here are located the offices, lecture rooms and laboratories of the Department of Botany. In addition to the main building, there is a greenhouse used for research and laboratory purposes. The herbarium contains about twenty thousand sheets of seed plants and ferns, twelve hundred sheets of liverworts and mosses and a collection of twenty-five thousand specimens of fungi. Erected in 1906 and named in honor of William S. Clark, president of the college 1867 to 1879.

Fernald Hall.—This building, erected in 1909, was named in honor of Professor Charles H. Fernald, who served the college for twenty-four years, built up a strong department in Zoölogy, created the department of Entomology, and acted as Director of the Graduate School. Fernald Hall houses the Department of Entomology, Zoölogy and Geology. In addition to laboratories, lecture rooms, and offices, there is a Geological Museum, a Zoölogical Museum and a collection of over 160,000 insects. Material in these collections is available for study and for exhibition purposes. In the basement is located the foods laboratory of the department of Home Economics.

Mathematics Building.—This is a small frame building containing classrooms for instruction in mathematics and surveying. There is also a well equipped drafting room, and a small one devoted to blue-printing.

Paige Laboratory.—The work in Veterinary Science is located in this building. In addition to the class, lecture, and laboratory rooms, there are the laboratories for the State Control and Research work on animal diseases. The museum contains a growing number of anatomical and pathological specimens, most of which are used for teaching purposes. In the rear of the building are the stables for housing both laboratory and larger animals under isolation conditions for dissection, post mortem examinations and for incineration purposes. Paige Laboratory was erected in 1898 and named for James B. Paige, professor of Veterinary Science from 1891 to 1922.

Physical Education Building.—This building dedicated at Commencement in 1931, offers splendid modern facilities for physical education including a swimming pool 75 by 30 feet, an exercise hall 150 by 180 feet, locker rooms, baths, hand ball court, and other modern facilities. Of the total cost of \$287,000, alumni and friends of the college contributed \$115,000; the remainder was appropriated by the State Legislature.

Drill Hall.—This building houses the Department of Military Science. It also contains locker and dressing rooms for women students and a large exercise hall for their work in physical education.

Alumni Field.—This tract of land was transformed into an Athletic Field, containing a baseball diamond, football field, and cinder track, by the Alumni and friends of the college. Completed 1915.

Memorial Hall.—The social center of student life is Memorial Hall. It was erected by the Alumni, students, faculty and friends of the college in memory of those men of this college who died in the World War. In the basement are bowling alleys, pool tables, a store, post office and barber shop. On the main floor are eight offices for the leaders of various student activities, a large reading room and a beautiful Memorial Room in which is found a tablet bearing the names of the sons of the college who gave their lives in the Great War. On the second floor is an auditorium seating 350 persons. This room is also used for college dances. Memorial Hall was erected in 1921.

Library.—The Library contains one of the best collections in agriculture and related sciences in the country, with especial strength in entomology, botany, chemistry, horticulture, landscape architecture, soil science and animal husbandry, but with considerable collections also in literature, history, economics and sociology. There are over 90,000 bound books, and over 50,000 classified pamphlets giving most recent information. The periodical file contains over 550 current magazines, both scientific and popular, and a careful

selection of newspapers, together with many periodical publications of learned societies. The Library is unusually rich in files of journals and proceedings of Experiment Stations and learned societies. The building is open on week days from 8 A.M. to 10 P.M., and from 1:30 to 4:30 and 7 to 9 P.M. on Sundays during terms, and with somewhat shorter hours during vacations and Summer School. The fine granite building was erected in 1885 and originally housed both College Chapel and Library.

Power Plant.—Heat and light are supplied to all the buildings on the campus from a central power plant. This was erected in 1902 and has been subsequently remodeled.

FARM BUILDINGS, LAND AND EQUIPMENT.

College Farm and Barns.—The college farm consists of 240 acres located just west of South College. Most of it is suitable for cultivation and is operated on regular rotation. Much of the farm as it now stands has been made productive by tile draining and clearing the land of brush and stumps. The principal crops raised are those which can be utilized by the livestock, together with some cash crops such as cabbage, carrots, potatoes, and hay. For instructional work the farm is available for study in field crops, planning of crop rotation, practical field operation of farm machinery and tractors and farm management. The livestock of the farm consists of about 165 head of registered cattle which are excellent representatives of the Ayrshire, Guernsey, Holstein, Jersey, Milking Shorthorns, and Hereford breeds, a considerable number of registered Berkshire and Chester White swine, a flock of about 100 Shropshire and Southdown sheep and 20 Percheron horses. These animals are used chiefly for demonstrational and instructional work in feeding and herd management and in the teaching of correct types by much practice in judging. The farm buildings are model structures for their various purposes. They were erected in 1909 and subsequently. The dairy barns contain efficient and modern equipment for their respective purposes. The sheep barns and piggery are located several hundred yards from the dairy barns.

Cavalry Stable.—This stable has a capacity for the sixty horses which are used by the M. S. C. Cavalry troop. This building is maintained by the Federal Government. Erected in 1925.

Poultry Plant.—The college poultry plant consists of about twenty acres of land and in addition to the various buildings that go to make up a modern poultry plant. Although only eight acres of the land comprising the plant are college-owned this quantity permits for a three-year growing rotation. The plant will accommodate 2,000 laying birds and has growing facilities for about 7,000 chicks. The incubator capacity of the plant is approximately 12,000 eggs at one time. Located about one-half mile east of the college on East Pleasant Street, is the experimental poultry farm which accommodates about 1,200 adult birds and has hatching facilities for about 3,000 chicks. Here experiments on breeding poultry for egg production and disease control are carried on under strict quarantine.

The Hatch Barns.—These structures house the live stock which have been segregated from the main herd and flocks for the purpose of experimentation in connection with the subject of feed and feeding. Erected in 1891.

Experiment Station Barns.—These buildings contain the equipment and animals used in connection with the work of the Experiment Station.

Orchards and Vineyards.—The college orchard contains about 20 varieties of peaches, 25 of plums, 20 of pears, and 100 of apples. Common varieties of grapes are grown in the vineyards and with the various approved trellis systems. These orchards are used for teaching material in Pomology.

Vegetable Gardens.—Here are grown the class material used by the vegetable gardening department.

Mt. Toby Demonstration Forest.—This is an area of approximately 750 acres located on Mt. Toby. It contains the various types of forest growth found throughout the State. It serves as a field laboratory in forestry. Students have the privilege of working out problems in silviculture, forest mensuration and management. Improvement cuttings, cuttings for utilization and forest planning are conducted here also.

COURSES OF INSTRUCTION.

COURSES LEADING TO A DEGREE.

Four-Year Course.—The degree of Bachelor of Science is granted to those students who satisfactorily complete the regular four-year course. Special arrangement is made for some graduates of county agricultural schools to receive the degree Bachelor of Vocational Agriculture for four years of college work.

Five-Year Course in Landscape Architecture.—A five-year course is offered in Landscape Architecture leading to the degree of Bachelor of Landscape Architecture.

Graduate School.—The degrees of Master of Science, Master of Landscape Architecture and Doctor of Philosophy may be granted upon the completion of satisfactory study, research and a thesis.

Summer School.—Both graduate and undergraduate courses are offered in the six weeks' summer school and credits earned may apply toward the Bachelor's degree or advanced degrees.

NON-DEGREE COURSES.

Several short courses in agriculture are offered which do not lead to a degree. These are for the benefit of those who are not prepared to take the degree course or who desire only a practical training in modern agriculture methods.

Stockbridge School of Agriculture.—This is a two-year course in practical agriculture offering a high type of training to those who wish to enter some special agricultural enterprise. A separate descriptive catalogue will be sent on request.

Winter School.—A ten weeks' practical course in agricultural and horticultural subjects begins about January first each year. The courses are so arranged that a student may choose such subjects as will enable him to specialize in the line of work in which he is most interested.

HEALTH SERVICE.

The College endeavors to safeguard the health of all students while on the campus, and for this purpose maintains a Physician as Supervisor of Student Health, a resident registered nurse, and a small infirmary.

- (1) Physical examination by the Supervisor of Student Health is required of all undergraduate students annually, or oftener if indicated. This examination is given to freshmen during matriculation week. Entering women are also required to present an examination certificate from their family physician on forms supplied by the College.
- (2) The Supervisor of Student Health has offices in the Physical Education Building where he may be consulted during college hours.
- (3) Infirmary—Its purpose is to furnish a suitable place for professional attention in case of illness or accident. The out-patient clinic is held here daily.
- (4) Students are urged to consult the Supervisor of Student Health or the resident nurse at the first sign of physical disorder or for even minor accidents. Many severe illnesses and much lost time can be avoided by early or preventive treatment.
- (5) The infirmary charges will be at the rate of \$2 per day, and will be charged when one or more meals are obtained at the infirmary or when the student remains at the infirmary for one or more nights. A nominal charge may be made to out-patients for miscellaneous treatment of a minor character.
- (6) In addition to the fee charged as specified in paragraph 5, the following additional expenses will be charged to the patient.
 - (a) *Nurses.*—In case a special nurse is required for the proper care of an individual the services and board of this nurse will be paid by the patient. Such a nurse will be under the general supervision of the resident nurse.
 - (b) *Professional Service.*—If a student requires continuous medical attention by a physician, he may be required to select his physician and become responsible for fees charged by that physician.

- (c) *Supplies*.—Special medical supplies prescribed by a physician will be charged to the patient.
- (d) *Laundry*.—Expense for personal laundry incurred by students while in the infirmary will be charged to the individual student.

STUDENT EXPENSES.

Student college expenses vary from approximately \$450 per year to \$600 for the normal economical student. First year expenses are usually greater than those of the other three years and there is less opportunity in this year to earn. It is, therefore, recommended to the entering student that he have available at least \$450 with which to meet the expenses of the first year. Women students are recommended to plan on a minimum expense of \$550.

The following summary of a year's expenses includes only those items which are strictly college costs and does not include amounts for clothing, travel, etc., which vary with the individual. Tuition for residents of Massachusetts is \$60 and for others \$180.

	Low	Normal
Tuition (citizens of Massachusetts)	\$60.00	\$60.00
Matriculation fee (first year)	5.00	5.00
Room in college dormitory or in private house	70.00	140.00
Board, \$6.00 per week (College Dining Hall)	204.00	204.00
Laundry, 50 to 85 cents a week	18.00	30.00
General Laboratory fee	12.00	12.00
Health fee	4.50	4.50
Books, stationery and miscellaneous items	60.00	90.00
Student Taxes	30.00	30.00
	\$463.50	\$575.50

INITIAL PAYMENT FOR FRESHMEN.

The initial payment required of freshmen at the time of fall registration is approximately \$190 and is made up of the following items:

Tuition (citizens of Massachusetts)	\$30.00
Room rent (dormitory)	53.00
General laboratory fee	6.00
Matriculation fee	5.00
Health fee	2.50
Board (College Dining Hall to Dec. 1) (Approx.)	60.00
Military Uniform	18.50
Student Government Tax	2.50
Student Activities Tax	12.00
	\$189.50

GRADUATION REQUIREMENT.

No student will be graduated unless all bills due the college are paid on or before the Wednesday preceding the graduation exercise. If paid after that date and otherwise eligible he may graduate the following year.

Diplomas and letters of honorable dismissal will be withheld from all students who have not paid bills due the college or legitimate bills for room rent due fraternities or private individuals.

ADVANCE PAYMENT.

Prospective new students will be expected to make an advance payment of \$15 to the Treasurer of the College as soon as they are notified by the Dean that they are accepted for admission. This will be considered as first payment on registration fees which will be due at time of matriculation in September and will be returned to the student if he advises the College before August 20 that he will not present himself for admission. If the student fails to notify the College of

* These taxes are for the support of student activities and entitle each student to free participation in various enterprises which they represent.

withdrawal before that date this preliminary payment will be forfeited and will be considered payment for the expenses involved in preliminary admission arrangements.

REFUNDS.

A student who leaves college for any reason before a semester is half complete will have refunded to him one-half the fees paid for that semester, except the matriculation fee; but one who leaves after a semester is half over will be allowed no rebate of fees and a refund of only unused board and room charges.

COLLEGE FEES.

Matriculation Fee. — All students entering the college for the first time as undergraduates are charged a matriculation fee of \$5 to cover the costs of matriculation.

Tuition. — Residents of Massachusetts are charged a tuition fee of \$60 per year payable in advance in two installments of \$30 each on the first day of each semester. For those who are not residents of Massachusetts, the tuition fee is \$180 per year. Students entering from Massachusetts are required to file with the Treasurer a statement signed by town or city clerk, stating that the applicant's father or guardian is a legal resident of Massachusetts, unless applicant himself is of legal age in which case a similar statement must be filed indicating his own legal residence.

General Laboratory Fee. — A fee of \$6 per semester is charged to cover the cost of laboratory materials used and incidental supplies for various courses.

Health Fee. — A fee of \$4.50 per year is charged to cover the cost of the student health service maintained by the College.

Military Uniform. — All students taking military drill are required to make deposit of \$18.50 for the uniform. A rebate of \$15 is made when this uniform is returned.

BOARD.

All freshmen students and all residents of college dormitories are required to board at the college dining hall. Service is on a cafeteria basis and students pay in advance at the rate of six dollars per week, approximately, as follows:—

At the opening of college	\$60.00
At December 1	42.00
At the beginning of second semester	48.00
Upon return from spring recess	54.00

For absences of one week or more rebates at the rate of \$5.50 per week may be granted provided the absence is authorized by the Dean and the rebate approved by the Treasurer. No rebates will be allowed for absences of less than one week.

If a student's home is nearby and for this or any similar reason he is regularly absent from the campus over week ends, upon request from his parent or guardian approved by the Dean of the College, he may board in the college dining hall for a five-day week (fifteen consecutive meals beginning with Monday breakfast) at the rate of 80 per cent of that paid for a seven-day week.

Excuses from compliance with these regulations concerning board shall be made only by the Treasurer of the College, who may require a recommendation in individual cases from the Student Health Officer, if the excuse is requested for health reasons, or from the Dean if the reason has to do with the student's academic opportunities.

ROOMS.

All freshman students are expected to room in college dormitories unless excused by the Dean. Registration for freshman girls will be closed as soon as all available dormitory space has been assigned. Men students who cannot be accommodated in dormitories will be permitted to live in approved private homes. An application for a room cannot be filed until the student has been accepted for entrance. A \$15 deposit, made payable to the Treasurer of M. S. C., must accompany the application. In case of withdrawal before August 20, this will be refunded. As far as is feasible, rooms will be assigned in the order in which applications for the same are received. The student will be notified as soon as the assignment is made. Dormitory rooms rent for from \$42 to \$68 per semester.

Rooms for Men.—Dormitory accommodations are available for about one hundred and ten freshman men in North College and South College. The rooms are furnished except for necessary bedding or linen. They are cared for by the students who occupy them. Upper class men usually obtain rooms in private dwellings located near the campus. In most cases these rent for from \$2.50 to \$4 per week, depending somewhat on the location, and whether or not they are single or double. Such rooms are usually furnished. Students desiring aid in obtaining off campus rooms should write to the Assistant to the Dean. The College does not secure these rooms for the student but does keep a desirable list for student aid.

Rooms for Women.—Dormitory accommodations are available for about one hundred and five women students in the Abigail Adams House. These rooms are furnished except for necessary bedding or linen and are cared for by the students occupying them.

STUDENT EMPLOYMENT.

The College affords opportunity for part-time employment for a limited number of needy students. The number of applicants usually far exceeds the number of positions open so that no guarantee can be made that a student will find employment through the College. A faculty employment committee of which the Secretary of the College is chairman renders every possible assistance to deserving students in search of employment. Besides such opportunities on the campus as waiters and kitchen helpers at the dining hall, janitors for buildings, assistants on the farm and in college laboratories, there are some opportunities in private homes and businesses in the town.

Prospective students should be cautioned not to depend too much upon their earning capacity in the first year. This year is the most difficult to finance for two reasons. This is the student's first experience with college work and the usual result is that more time is required for study and less is therefore available for work. In this year also, since it is the first, the student is less familiar with his surroundings and not so able to locate work. Upper class men usually have most of the available jobs before the freshmen get acclimated. Students who are planning to enter college for the first time are therefore advised that they should have at least \$450 available with which to meet the expenses of the first year. Some students stay out of school for a year after graduating from high school in order to work and save this amount.

SCHOLARSHIPS.

Scholarships are awarded only to needy students of high character, whose habits of life are economical and who have maintained an average of at least 80% in their college course during the preceding year. Scholarships may also be granted to applicants for admission to the College provided they are candidates for a degree, are in need of financial assistance and are able to meet the entrance requirements in full. Complete information relative to the student's need for financial aid must be presented before any application can be acted upon. Scholarships are paid in installments at the beginning of each semester in the form of a credit on the student's bill for that term. A scholarship may be discontinued at the close of any semester if the scholastic record of the recipient is unsatisfactory.

Blanks for applying for a scholarship may be obtained from the Dean of the College. Applicants from the three upper classes must file at the Dean's Office before the close of the college year an account of their income and expenses for that college year together with a statement of their resources for the coming year. Prospective freshmen may file their applications at the time their entrance requirements are satisfied in full.

The following scholarships are available:

1. General scholarships:

- a. Nineteen scholarships of \$60 each, known as the Porter L. Newton Scholarships.
- b. One scholarship of \$60 known as the Mary Robinson Scholarship.
- c. One scholarship of \$60 known as the Henry Gassett Scholarship.
- d. One scholarship of \$60 known as the Whiting Street Scholarship.

2. Scholarships limited to students from Berkshire County:
 - a. At least ten scholarships of \$60 or more, known as the Frederick G. Crane Scholarships.
3. Scholarships limited to women students:
 - a. One scholarship of \$150, known as the Helen A. Whittier Memorial Scholarship.
 - b. One scholarship covering all college expenses of the freshman year known as the Cotting Memorial Scholarship.
4. Scholarships limited to men students of Hampshire County:
 - a. Twenty-five scholarships of approximately \$100 known as the Wilbur H. H. Ward Scholarships.
5. Scholarships limited to students from Worcester:
 - a. Two scholarships of approximately \$250 each provided by a bequest from Mrs. Betsey Pinkerton.
6. Hood Dairy Scholarships:
 - a. Four scholarships of \$200 each for students of Dairying provided by the gift of Dr. Charles H. Hood.

LOANS.

Loans may be granted to needy students requiring some assistance in meeting the expenses of the college course. The student must present a properly endorsed note at the time a loan is made. Money thus loaned is at a low rate of interest until the student graduates or severs his connections with the college. Applications for a loan may be made at the Treasurer's Office.

These loans are made available through the income from the following funds:

Danforth Keyes Bangs Fund.—This is a gift of \$6,000 from Louisa A. Bangs of Amherst, the income of which is to be used annually in aiding poor, industrious and deserving students to obtain an education in the Massachusetts State College.

Charles A. Gleason Fund.—This is a gift of \$5,000 from Charles A. Gleason of North Brookfield, Massachusetts, a trustee of the college from 1889 to his death, September 29, 1925.

Massachusetts Agricultural Club Fund.—The Massachusetts Agricultural Club has given \$500 to be used as a loan fund at the Massachusetts State College to help out deserving students there who intend to go into agricultural work.

4-H Club Loan Fund for Boys.—A loan fund of \$1,000.

4-H Club Loan Fund for Girls.—A loan fund of \$100.

Vincent Goldthwait Memorial Loan Fund.—A gift of \$5,000 from Dr. Joel I. Goldthwait in memory of his son.

SCHOLARSHIP HONORS AND AWARDS.

Honors Groups.—At the beginning of each semester a list is posted of those students who during the previous semester made a general average of 80 per cent or better. Three groups are recognized: those between 90 and 100; those between 85 and 90; and those between 80 and 85. Sophomores, Juniors and Seniors in the first two groups are allowed considerable freedom in the matter of class attendance.

General Honors Course.—High ranking Seniors who have maintained an average of 80 per cent throughout the college course are given the privilege of enrolling for a general honors course given during the second semester. Some outstanding instructor on the staff of the College or some other college is chosen to teach this. Since he has a group of selected senior students he is allowed the greatest freedom in the matter of course content and method of presentation.

Departmental Honors.—A student who has shown outstanding promise within some department and has maintained a general scholastic average of 80 per cent or better is permitted to apply for the privilege of registering for departmental honors. If his application is accepted by his department and the Honors Committee, he is allowed to pursue a course of independent study with the department of his choice throughout his senior year. This may include intensive reading, investigation or laboratory work in connection with some problem that he chooses for his consideration. The objective is to create on the

part of the student initiative, the power of independent investigation and to develop in him the spirit of research. Although the student is responsible for his undertaking he is encouraged to consult with his department in regard to his work should the need arise. At the close of his study the student presents a thesis covering his investigation. In addition he may be required to appear for an oral or written examination. If by the excellence of his work he satisfies all the requirements of his department and the Honors Committee his name will appear on the commencement program as receiving honors in the field of his specialization.

Phi Kappa Phi Elections.—Those members of the senior class whose scholarship average has been 85 or above are eligible for election to the Honorary Scholarship Society of Phi Kappa Phi. Not more than 15 per cent of the class can be elected, however.

SCHOLASTIC PRIZES.

Phi Kappa Phi Award for Scholarship.—Massachusetts Chapter of the Phi Kappa Phi Honorary Scholarship Society offers an award of \$100 for outstanding work in scholarship. This is given to some member of the Senior class at the opening of college in the fall. The award is based on the record of the first three years.

The Grinnell Prizes.—Given by the Hon. William Claflin of Boston, in honor of George B. Grinnell, Esq., of New York, for excellence in theoretical and practical agriculture. The contest is open to those senior students whose records on the registrar's books show an average standing of 80 or above for the technical work taken in the Divisions of Agriculture and Horticulture during the junior and senior years. There are three prizes of \$25, \$15, and \$10.

The Burnham Prizes.—These were made possible through the generosity of Mr. T. O. H. P. Burnham of Boston. Prizes of \$15 and \$10 are awarded to those students delivering the best and second best declamations in the Burnham contest. The preliminary contests are open under certain restrictions to freshmen and sophomores.

The Flint Prizes.—The Flint Oratorical Contest was established in 1881 by a gift of the late Charles L. Flint, a former president of the college. After his death the prizes were continued by college appropriation. Prizes of \$30 and \$15 are awarded as first and second prizes to those two students delivering the best orations in this contest.

The Hills Botanical Prize.—This is given through the generosity of Henry F. Hills of Amherst, for the first and second best herbaria. Competition is open to members of the senior, junior and sophomore classes. First prize \$20, second prize \$15.

The Betty Steinbugler Prize in English.—This prize of \$10 was endowed by John L. Steinbugler, New York City, in honor of his daughter Elizabeth Steinbugler Robertson, a graduate of this College in the Class of 1929. It is awarded annually to a woman in the junior or senior class who has written the best paper on a subject of literary investigation in a course in English during the year.

ATHLETIC AND ACADEMICS PRIZES.

The Allan Leon Pond Memorial Medal.—This medal is awarded for general excellence in football in memory of Allan Leon Pond of the class of 1920, who died February 26, 1920. He was a congenial companion, a devoted lover of Alma Mater, a battle-scarred, though youthful, veteran of the Great War, a fine all-around athlete and a true amateur. He would rather win than lose, but he would rather play fair than win. He has been characterized as a typical student of his College.

The Southern Alumni Baseball Cup.—This cup is awarded to that member of the baseball team who contributes most to the success and reputation of the team, both in respect to skill and spirit.

The Thomas E. Minkstein Memorial Award.—This award is made by the class of 1931 in memory of their classmate who died July 16, 1930, while he was captain-elect of football. The award is given to one of the outstanding men in

the Junior Class who has nearly as possible attained those standards of athletics, scholarship and leadership set by him whose memory this award honors.

The George Henry Richards Memorial Cup.—This cup is awarded annually to the member of the basketball team who shows the greatest improvement in leadership, sportsmanship, and individual and team play during the season. It is in memory of George Henry Richards of the Class of 1921 who died suddenly while a student at the College.

Academics Conspicuous Service Trophy.—This trophy is awarded to that student who during the past 12 months has made the most important, single contribution to the Academic Activities.

Academics Managers' Prize.—Fifty dollars in gold awarded annually to that Academics manager who fulfills his duties most efficiently.

Poetry Prize.—Twenty-five dollars awarded to the author of the best poem published in the *Collegian* during the year.

STUDENT ACTIVITIES AND ORGANIZATIONS.

No small part of the value received from four years of college is the training that one acquires through participation in student activities. Student organizations offer excellent opportunities for leadership in a wide variety of fields.

STUDENT GOVERNMENT.

The Senate.—This is a student governing council. It is composed of representatives elected from the Junior and Senior classes. Besides acting as general director of undergraduate conduct it represents the interests of the students and the student body before the Faculty.

Adelphia.—This is a senior honorary society. The members are usually chosen from those who have been prominent in college activities. The society attempts in a quiet, unassuming way to mold student life on the campus.

The Honor Council.—The Honor System prevails at this college. The foreword of the Honor System reads as follows: "We, the students of the Massachusetts State College, believe that the goal of education is character. The man of character deals fairly with himself, and with others, and would rather suffer failure than stoop to fraud. The Honor System stands for this attitude in all relations of the students with the Faculty. In expression of our belief we pledge ourselves to the support of the constitution of the Honor System." Matters pertaining to the Honor System are in direct charge of the Student Honor Council, consisting of members elected from the four classes.

The Women's Student Council.—All appropriate matters pertaining to the conduct of women students are under the control of this council. It is composed of members selected from the senior, junior, and sophomore classes by all the women students.

ACADEMIC ACTIVITIES.

The College Musical Clubs include an orchestra, a band, and a mixed chorus. These make various appearances during the year, both in Amherst and on tour.

The Dramatic Club, the Roister Doisters, presents annually a revue and two plays, one in connection with the Junior Promenade, and the other at Commencement. There is a Debating Society which conducts both class and inter-collegiate debates. All academic activities are supervised by the Academic Activities Board composed of alumni, faculty, and students, and find recognition in semi-annual awards of gold and silver medals.

"The Massachusetts Collegian" is a weekly newspaper, published by the undergraduates of the college.

"The Index" is the college yearbook published by the members of the Junior class.

COLLEGE FRATERNITIES.

There are several national and local fraternities represented on the campus. Rushing rules and general matters dealing with fraternity life are in charge of the Inter-fraternity Conference. This conference awards scholarships, a baseball cup, and a relay plaque to the winners of the Inter-fraternity Contests.

INTER-COLLEGIATE ATHLETICS.

The College is represented in inter-collegiate athletics by teams in all the

leading sports, including football, baseball, track, hockey, and basketball. General policies governing athletics are in charge of the Athletic Board, composed of Alumni, Faculty, and students.

PROFESSIONAL CLUBS.

There are several professional clubs established in connection with the major work of the college. Included among these is an Animal Husbandry Club, Landscape Art Club, Pomology Club, Agricultural Economics Club, and Floricultural Club.

RELIGIOUS ORGANIZATIONS.

The Young Men's Christian Association and the Young Women's Christian Association are active both on the campus and off. In addition there is a Catholic Club, and a Jewish Menorah Society. The Cosmopolitan Club has as its object the cultivation of peace and the establishment of strong international friendship.

THE SOCIAL UNION.

The Social Union was established in 1907. All students become members of the Union in consideration of a small part of the Student Activities Fee. In the fall and winter months the Union gives a series of entertainments.

STANDARDS OF DEPARTMENT.

The customary high standard of college men and women in honor, manliness, self-respect and consideration for the rights of others constitutes the standards of student deportment.

The privileges of the college may be withdrawn from any student at any time, if such action is deemed advisable.

It should be understood that the college, acting through its president or any administrative officer designated by him, distinctly reserves the right, not only to suspend or dismiss students, but also to name conditions under which students may remain in the institution. For example, if a student is not doing creditable work he may not only be disciplined but he may also be required to meet certain prescribed conditions in respect to his studies, even though under the foregoing rules his status as a student be not affected. The same provision applies equally to the matter of absences ("cuts"). According to the rules a student is allowed a certain percentage of absences from class and other exercises. This permission, which implies a privilege and not a right, may be withdrawn at any time for any cause.

Similarly, also, it applies to participation in student activities. Though this will ordinarily be governed by the rules as already laid down, yet if, in the judgment of the college authorities, a student is neglecting his work on account of these activities, the privilege of participating in them may be withdrawn for such time as is considered necessary. Moreover, it may be withdrawn as a punishment for misconduct. Prospective students or their parents may, upon application, obtain a copy of the faculty rules governing student relations to the college.

FRESHMAN REGISTRATION.

All members of the incoming freshman class are required to be in residence on the campus for the period September 18 to September 23, 1933, inclusive. This period is known as Freshman week. During this week will be given the several psychological examinations and tests required of freshmen. In addition physical examinations will be given to the men students. Such matters as pertain to schedule and section assignments will be taken care of at the same time. Lectures on student activities, college customs, and college curriculum will be given also. The object of this week is to introduce the new student into the college, so that only the minimum amount of time will be lost when the actual studies begin.

Admission to Collegiate Courses.

A. APPLICATION FOR ADMISSION.

Correspondence concerning admission should be addressed to the Dean's office.

Every applicant for admission to the college must be at least sixteen years old, and must present to the Dean proper testimonials of character, which, whenever possible, should come from the principal of the school at which the applicant has prepared for college. All applications for admission should be received at the Dean's Office on or before June first of the year in which the candidate expects to enroll. Blanks for such application may be obtained by addressing the Dean of the college. All entrance credentials must be in the hands of the Dean before the applicant can matriculate.

B. MODES OF ADMISSION.

Students are admitted to the freshman class either upon certificate or upon examination. No *diploma* from a secondary school will be accepted.

CERTIFICATES.—The Massachusetts State College is affiliated with the New England College Entrance Certificate Board. Therefore certificates of admission will be accepted from schools approved by the Board. Certificates of admission will also be accepted from any Massachusetts school listed as class "A" by the State Department of Education, but not included in the approved list of the New England College Entrance Certificate Board. Principals of schools in New England who desire the certificate privilege should address the secretary of the Board, Professor Frank W. Nicolson, Wesleyan University, Middletown, Conn. Certificates from schools outside of New England may be received if those schools are on the approved list of the leading colleges of the section in which the school in question is located.

The credentials of the Board of Regents of the State of New York are accepted as satisfying the entrance requirements of this college when offered subject for subject, provided the grades are satisfactory.

Certificates in order to be accepted must present in the prescribed and restrictive elective groups at least three of the necessary fourteen and one-half units. It is to be understood, however, that responsibility for certification in either elementary French, elementary German, English 1 or English 2, Latin A, *Great A* or Algebra, must be assumed by one school, if the candidate has received his preparation in any one subject named above in more than one school. Subjects lacking on certificate must be made up at the time of the examinations for admission. Conditions to the amount of two units will be allowed.

Blank forms for certification—sent to principals or school superintendents only—may be obtained on application to the Dean of the college.

SPECIAL CERTIFICATE ARRANGEMENT FOR STUDENTS FROM AGRICULTURAL SCHOOLS.—Superior graduates of Vocational Schools of Agriculture in Massachusetts and Vocational Agricultural Departments in Massachusetts High Schools may be accepted for the Degree of Vocational Agriculture provided:—

(a) they are unqualifiedly recommended by the Vocational Division of the Department of Education, as *bona fide* Vocational Graduates with superior rank; and

(b) that they can present at least $14\frac{1}{2}$ units of certified entrance, approved as to quality and quantity by the State Department of Vocational Education.

ADMISSION BY FOUR COMPREHENSIVE EXAMINATIONS.—By this plan a candidate's qualifications for admission will be based upon the following considerations:

(a) **SCHOOL RECORD:** A candidate must present to the Committee on Entrance a complete transcript of his secondary school course giving the subjects and the grades for the four years previous to college entrance, and a confidential estimate of character, personality, and promise of ability to do college work from the school principal. This should be sent to the Dean not later than May 1. The Committee must give its permission before the applicant may take the examinations.

(b) The following comprehensive examinations must be taken unless for satisfactory reasons the Committee allows a substitution for 4:—

- | | |
|-----------------------|-------------|
| 1. English | three units |
| 2. Mathematics | three units |
| 3. History | one unit |
| 4. A foreign language | two units |

These must be the College Entrance Examination Board Plan B examinations given in June. A candidate under this plan will be admitted without condition or refused admission. In the event that a substitution is allowed for foreign language the student must take at least one year of modern language in college without receiving college credit therefor.

C. EXAMINATIONS.

Entrance examinations for admission to the Massachusetts State College will be held at the following centers:—

In June Amherst, Stockbridge Hall, room 114.
 Cambridge, Massachusetts Institute of
 Technology, Massachusetts Ave. entrance.

In September Amherst, Stockbridge Hall, room 114.

Please note that September examinations are held in Amherst only.

Schedule for Entrance Examinations June 15-17, 1933.

First Day.

- 8.30 A.M. Algebra.
 10.30 A.M. Chemistry.
 2.00 P.M. History (ancient, medieval and modern, English, United States and Civics).

Second Day.

- 8.30 A.M. English 1 and 2.
 11.30 A.M. Botany and Biology.
 2.00 P.M. Plane Geometry.
 3.30 P.M. Physics.

Third Day.

- 8.30 A.M. French, German, Spanish, required and elective.
 1.00 P.M. Latin, elementary, intermediate and advanced, and all one-half credit electives, except those already noted.

Schedule for Entrance Examinations September 13-16, 1933.

First Day.

- 8.15-5.00 P.M. Greek, elementary and intermediate.

Second Day.

- 8.30 A.M. Algebra.
 10.30 A.M. Chemistry.
 2.00 P.M. History (ancient, medieval and modern, English, United States and Civics).

Third Day.

- 8.30 A.M. English 1 and 2.
 11.30 A.M. Botany and Biology.
 2.00 P.M. Plane Geometry.
 3.30 P.M. Physics.

Fourth Day.

- 8.30 A.M. French, German, Spanish, required and elective.
 1.00 P.M. Latin, elementary, intermediate and advanced, and all one-half credit electives, except those already noted.

D. REQUIREMENTS FOR ADMISSION.

The requirements for admission are based on the completion of a four-year high school course or its equivalent and are stated in terms of units. A unit is the equivalent for at least four recitations a week for a school year.

Fourteen and one-half units must be offered for admission in accordance with the entrance requirements outlined below. In some instances students are allowed to enter conditioned in not more than two units.

Entrance Requirements.

1. *Prescribed.*—The following units are required:—

Algebra	1½
Plane Geometry	1
English 1 (Grammar and Composition)	2
English 2 (Literature)	1
History	1
A foreign language	2
	8½

2. *Restricted electives.*—From two to six units selected from the following subjects:—

Mathematics and Science.

Solid Geometry	½
Trigonometry	½
Biology	1
Botany	½ or 1
Chemistry	1
Geology	½
Physical Geography	½
Physics	1
Physiology	½
Zoology	½

History.

Ancient	1
English	1
Medieval and Modern	1
United States and Civics	1

Foreign Language.

Elementary French	2
Elementary German	2
Elementary Spanish	2
Elementary Latin	2
Elementary Greek	2
Intermediate French	1
Intermediate German	1
Intermediate Spanish	1
Intermediate Latin	1
Intermediate Greek	1
Advanced French	1
Advanced German	1
Advanced Spanish	1
Advanced Latin	1

3. *Free margin electives*—not over four units. In case fourteen and one-half units cannot be presented in the prescribed and restricted elective groups, units not to exceed four may be offered as free margin electives. Credit in the free margin will be allowed for any substantial courses (agriculture, general science

and fourth year English included) not listed under the prescribed and restricted elective groups for which credit of not less than one-half unit earned in one year is given toward a secondary school diploma. Since no entrance examinations are given in these subjects they may be offered only on certificate.

E. OTHER INFORMATION ABOUT ENTRANCE.

1. If elementary algebra and plane geometry are counted as three units the total requirement for admission will be fifteen.
2. Both the credits under the prescribed and restricted elective groups must be presented either by certificate from an approved school or by examination or by a combination of both. Credit by certificate will not be accepted unless at least three units are offered.
3. Candidates are allowed to spread their entrance examinations over the three consecutive periods just previous to their entrance into college. A period means June to September of the same year.
4. Examinations for the removal of entrance conditions will be held during the second week of January.
5. All entrance conditions must be satisfied before a student is permitted to enter upon the work of the sophomore year.
6. The privileges of the college may be withdrawn from any student at any time if such action is deemed advisable, regardless of whether entrance was gained by certificate or examination.
7. The passing grade for an entrance examination is 60 per cent.

F. ADMISSION TO ADVANCED STANDING.

A student desiring to transfer to this college from another of recognized standing must present the following credentials:—

1. A letter of honorable dismissal from the institution with which he has been connected.
2. A statement or certificate of his entrance record.
3. A statement from the proper officer showing a complete record of his work while in attendance.
4. A marked catalogue showing the courses pursued.
5. A statement from the proper officer, giving the total number of credits required for graduation by the institution from which the applicant is transferring, and, of this total, the number that the applicant has satisfactorily completed at the time of the transfer.

The above credentials must be sent directly from the Registrar's office of the college from which the student is transferring. They should be addressed to the Dean of the Massachusetts State College. Applications will be judged wholly on their merits. The college may prescribe additional tests before accepting applicants or determining the standing to be granted them.

At least one year's work in residence is required of any student desiring to be recommended for the Bachelor of Science degree.

G. STATEMENT OF PREPARATION REQUIRED FOR ADMISSION.

AGRICULTURE.

Entrance credit in agriculture is granted on the following basis:—

- I. The Massachusetts State College accepts a maximum of four units in agriculture (except as described on page 33) from any secondary or county agricultural high school offering work in that subject, provided evidence of such work having been done is submitted on a principal's statement, as is indicated in the "free margin" group.
- II. In high schools organizing agricultural club work under the supervision and rules of the junior extension service of the college, one credit is granted for each full year of work performed under the following plan:—

Work of the Winter Term.—(a) The study of textbooks such as are suitable for secondary school instruction in agriculture.

(b) Course of study: A general outline of suggested topics for study.

(c) Visits by a representative of the Massachusetts State College for observation, counsel and advice in regard to kind and amount of work being done in agriculture.

(d) Formation of an agricultural club with officers from among its own members, meeting once a month under local supervision of someone authorized to act for the school authorities.

Work of the Spring Term.—Same in general form as winter term.

Work of Summer Term.—An approved project conforming to the rules of some one or more of the agricultural clubs of the junior extension service of the Massachusetts State College.

Work of the Fall Term.—(a) An exhibit of work.

(b) Reports and story of achievement submitted to the junior extension service of the college.

BIOLOGY.

The entrance examination in biology will cover the work outlined by the College Entrance Examination Board. This work should extend through one full year and include both laboratory and textbook study. The requirements are met by Hunter's *Civic Biology* and similar texts.

BOTANY.

For one unit of credit in botany, the work outlined in the statement of requirements issued by the College Entrance Examination Board, or its equivalent, will be accepted. This work should occupy one school year and include laboratory and supplementary textbook study. For one-half unit of credit, work that covers the same ground but occupies half the time required for a full unit of credit will be accepted. These requirements are met by such texts as Stevens' *Introduction to Botany* and Bergen & Davis' *Principles of Botany*. A notebook, containing neat, accurate drawings and descriptive records forms part of the requirement for either the half-unit or the one-unit credit. The careful preparation of an herbarium is recommended to all prospective students of this college, although the herbarium is not required.

CHEMISTRY.

The entrance examination in chemistry will cover the work outlined by the College Entrance Examination Board as preparatory for college entrance. In general, this consists of a year of high school chemistry from any standard textbook, with laboratory work on the properties of the common elements and their simpler compounds. No particular work is prescribed. The keeping of a notebook is required.

Students who do not take chemistry in the preparatory school begin the subject in college.

MATHEMATICS.

(a) *Required.*—Algebra: The four fundamental operations for rational algebraic expressions; factoring, determination of highest common factor and lowest common multiple by factoring; fractions, including complex fractions; ratio and proportion; linear equations, both numerical and literal, containing one or more unknown quantities; problems depending on linear equations; radicals, including the extraction of the square root of polynomials and numbers; exponents, including the fractional and negative; quadratic equations, both numerical and literal; simple cases of equations with one or more unknown quantities that can be solved by the methods of linear or quadratic equations; problems depending upon quadratic equations; the binomial theorem for positive integral exponents the formulas for the n th term and the sum of the terms of arithmetic and geometric progressions, with applications.

Plane Geometry: The usual theorems and constructions of good textbooks including the general properties of plane rectilinear figures; the circle and the measurement of angles; similar polygons; areas; regular polygons and the measurement of the circle; the solution of numerous original exercises, including loci problems; applications to the mensuration of lines and plane surfaces.

(b) *Elective*.—Solid Geometry: The usual theorems and constructions of good textbooks, including the relations of planes and lines in space; the properties and measurement of prisms, pyramids, cylinders and cones; the sphere and spherical triangle; the solution of numerous original exercises, including loci problems; applications to the mensuration of surfaces and solids.

Plane Trigonometry: A knowledge of the definitions and relations of trigonometric functions and of circular measurements and angles; proofs of the principal formulas and the application of these formulas to the transformation of the trigonometric functions; solution of trigonometric equations, the theory and use of logarithms, and the solution of right and oblique triangles.

PHYSICS.

To satisfy the entrance requirement in physics, the equivalent of at least one unit of work is required. This work must consist of both classroom work and laboratory practice. The work covered in the classroom should be equal to that outlined in Hall & Bergen's *Textbook of Physics* or Millikan & Gale; the laboratory work should represent at least thirty-five experiments involving careful measurements, with accurate recording of each in laboratory notebook.

PHYSIOLOGY.

Hough & Sedgwick's *The Human Mechanism*; Martin's *The Human Body*; Brier Course.

ZOOLOGY, PHYSICAL GEOGRAPHY, GEOLOGY.

The following suggestions are made concerning preparation for admission in the subjects named above:—

For physiography, Davis' *Elementary Physical Geography*; Gilbert & Brigham's *Introduction to Physical Geography*. For zoölogy, textbooks entitled *Animals* or *Animal Studies*, by Jordan, Kellogg and Heath; Linville & Kelley's *A Textbook in General Zoölogy*. For geology, A. P. Brigham's *A Textbook of Geology* or Tar's *Elementary Geology*.

Examination in these subjects will be general in recognition of the different methods of conducting courses; but students will be examined on the basis of the most thorough secondary school courses.

HISTORY.

The required unit must be offered in either ancient history, medieval and modern history, English history, or United States history and civics. Either one, two or three elective units in any of the historical subjects here named may be offered, provided that no unit be offered in the same subject in which the required unit has been offered.

Preparation in history will be satisfactory if made in accordance with the recommendations of the committee of seven of the American Historical Association, as outlined by the College Entrance Examination Board. The examination will require comparisons and the use of judgment by the candidate rather than the mere use of memory, and it will presuppose the use of good textbooks, collateral reading and practice in written work. Geographical knowledge may be tested by requiring the location of places and movements on outline maps.

To indicate in a general way the character of the textbook work expected, the texts of the following authors are suggested: Botsford, Morey or Myers, in ancient history (to 814 A.D.); Adams, West or Myers, in medieval history; Montgomery, Larned or Cheyney, in English history; Fiske, together with Luzzey and West, in United States history and civics.

ENGLISH.

The study of English in school has two objectives of equal importance: first, the ability to use the English language, in both speech and writing, clearly, correctly and effectively; and, second, the ability to read English literature with understanding and appreciation.

(1) *Grammar and Composition* (Two Units).—The first objective makes necessary a rigorous and reiterated instruction in grammar and composition, with special emphasis upon: spelling, sentence structure, punctuation and para-

graph development. College freshmen are found deficient particularly in these fundamental phases of rhetoric.

(2) *Literature* (One Unit).—The second objective is sought by means of two lists of books, designated as *Books for Reading* and *Books for Study*, from which may be selected material for a progressive, four-year course in literature. The student should be trained to read aloud, to memorize significant passages, to associate the books with their historic background and to have well in hand both content and structure. He should be prepared for general examination on the former list and detailed examination on the latter. However accurate in subject matter, no paper will be considered satisfactory if seriously defective in punctuation, spelling or other essentials of good usage.

LISTS OF BOOKS FOR 1932-1933.

1. Books for Reading.

From each group two selections are to be made, except that for any book in Group V a book from any other may be substituted.

Group I.

Cooper: *The Last of the Mohicans*.

Dickens: *A Tale of Two Cities*.

George Eliot: *The Mill on the Floss*.

Scott: *Ivanhoe* or *Quentin Durward*.

Stevenson: *Treasure Island* or *Kidnapped*.

Hawthorne: *The House of the Seven Gables*.

Group II.

Shakespeare: *The Merchant of Venice*, *Julius Caesar*, *King Henry V*, *As You Like It*, *The Tempest*.

Group III.

Scott: *The Lady of the Lake*.

Coleridge: *The Ancient Mariner*; and Arnold: *Sohrab and Rustum*.

A collection of representative verse, narrative and lyric.

Tennyson: *Idylls of the King* (any four).

The Aeneid or *The Odyssey* in a translation of recognized excellence, with the omission, if desired, of books I-V, XV and XVI of *The Odyssey*, or the *Iliad* with the omission, if desired, of books XI, XIII, XV and XXI.

Longfellow: *Tales of a Wayside Inn*.

Group IV.

The *Old Testament* (the chief narrative episodes in Genesis, Exodus, Joshua, Judges, Samuel, Kings and Daniel, together with the books of Ruth and Esther).

Irving: *The Sketch Book* (about 175 pages).

Addison and Steele: *The Sir Roger de Coverley Papers*.

Macaulay: *Lord Clive* or *History of England*, Chapter III.

Franklin: *Autobiography*.

Emerson: *Representative Men*.

Group V.

A modern novel.

A collection of short stories (about 150 pages).

A collection of scientific writings (about 150 pages).

A collection of prose writings on matters of current interest (about 150 pages).

A selection of modern plays (about 150 pages).

All selections from this group should be works of recognized excellence.

2. Books for Study.

One selection is to be made from each of groups I and II, and two from Group III.

Group I.

Shakespeare: *Macbeth*, *Hamlet*.

Group II.

Milton: *L'Allegro, Il Penseroso*, and either *Comus* or *Lycidas*.

Browning: *Cavalier Tunes, The Lost Leader, How They Brought the Good News from Ghent to Aix, Home Thoughts from Abroad, Home Thoughts from the Sea, Incident of the French Camp, Hervé Riel, Pheidippides, My Last Duchess, Up at a Villa—Down in the City, The Italian in England, The Patriot, The Pied Piper, De Gustibus, Instans Tyrannus, One Word More*.

Group III.

Burke: *Speech on Conciliation with America*.

Macaulay: *Life of Johnson*.

Lowell: *Democracy*.

Lincoln: *Speech at Cooper Union, his Farewell to the Citizens of Springfield, his brief addresses at Indianapolis, Albany and Trenton, the speeches in Independence Hall, the two Inaugural Addresses, the Gettysburg Speech, and his Last Public Address, together with a brief memoir or estimate of Lincoln*.

Carlyle: *Essay on Burns*, with a brief selection from Burns's poems.

FRENCH.

Elementary: The necessary preparation for this examination is stated in the description of the two-year course in elementary French recommended by the Modern Language Association, contained in the definition of requirements of the College Entrance Examination Board.

Third and fourth year French (elective subjects for admission).—For a third unit in French as an elective subject for entrance, the work heretofore described by the College Entrance Examination Board as "intermediate" is expected. For fourth unit, the work described as "advanced" is expected.

No examination for a third unit in French will be given unless the candidate has presented elementary French on certificate, or has written the examination in elementary French.

No examination for a fourth unit in French will be given unless the candidate has presented both elementary and intermediate French upon certificate, or has written the examination in both elementary and intermediate French.

GERMAN.

Elementary: The entrance requirements in German conform to those of the College Entrance Examination Board for elementary German (the standard two-year requirements).

Third and fourth year German (elective subjects for admission).—For a third unit in German as an elective subject for entrance, when required units have been offered in German, the work heretofore described by the College Entrance Examination Board as "intermediate" is expected. For a fourth unit, the work described as "advanced" is expected.

No examination for a third unit in German will be given unless the candidate has presented elementary German upon certificate, or has written the examination in elementary German.

No examination for a fourth unit in German will be given unless the candidate has presented both elementary and intermediate German upon certificate, or has written the examination for both elementary and intermediate German.

SPANISH.

Elementary: The necessary preparation for this examination is stated in the description of the two-year course in elementary Spanish recommended by the Modern Language Association, contained in the definition of requirements of the College Entrance Examination Board.

Third and fourth year Spanish (elective subjects for admission).—For a third unit in Spanish as an elective subject for entrance, the work heretofore described by the College Entrance Examination Board as "intermediate" is expected. For fourth unit, the work described as "advanced" is expected.

No examination for a third unit in Spanish will be given unless the candidate has presented elementary Spanish on certificate, or has written the examination in elementary Spanish.

No examination for a fourth unit in Spanish will be given unless the candidate has presented both elementary and intermediate Spanish upon certificate, or has written the examination in both elementary and intermediate Spanish.

GREEK.

Elementary — Greek grammar and composition: Translation into Greek of short sentences illustrating common principles of syntax.

The examination in grammar and prose composition will be based on the first four books of Xenophon's *Anabasis*.

Intermediate: Homer's *Iliad*, Books I and II (omitting Book II, 494 to end), and the Homeric forms, constructions, idioms and prosody.

Prose composition, consisting of continuous prose based on Xenophon, and other Attic prose of similar difficulty.

Translation of passages of Homer at sight.

The examinations in Greek, elementary and intermediate, will be given in September only.

LATIN.

Elementary: Two credit units will be allowed if satisfactory proficiency is shown (including grammar) in (a) the translation of a passage or passages taken from Caesar's *Gallic War*, covering at least four books, and (b) the translation of passages of Latin prose at sight.

Intermediate: Cicero (third oration *Against Catiline* and the orations *For Archias* and *For Marcellus*) and sight translation of prose.

Advanced: Virgil (*Æneid*, II, III and VI) and sight translation of poetry.

Collegiate Course of Instruction.

The course of study consists of four years of work planned to provide scientific foundation, cultural background, and professional training, and leads to the degree of Bachelor of Science (B.S.). The following five different major lines of specialization are provided: Agriculture; Horticulture; Home Economics; the Physical and Biological Sciences; and the Social Sciences.

FRESHMAN YEAR.

The work of the freshman year consists of definitely required subjects, most of which are identical for all students, in order to insure a uniform preparation in the more fundamental collegiate subjects. However, some differentiation is required in order to properly introduce each student to some major line of work in which he may find his professional interest, and major faculty contacts. This course is presented below in tabular form.

TABLE OF FRESHMAN SUBJECTS.

(Groups A and C of each semester are required of all freshman men; Groups A and D of all freshmen women; and one of the options of Group B must be selected by each freshman to complete his year's program of study.)

Group	First Semester	Cr.	Second Semester	Cr.
A	English 1	3	English 2	3
	Mathematics 1†	3	Mathematics 2†	3
	Chemistry 1 or 3	4	Chemistry 2 or 4 or	
	Orientation 1	2	Orientation 2	3
			Botany 2	4
B	I AGRICULTURE divisional electives			
	Agronomy 1	3	Agricultural Engineering 2	3
	II HOME ECONOMICS divisional electives			
	Home Economics 1	3	Home Economics 2	3
	III HORTICULTURE and LANDSCAPE ARCHITECTURE divisional electives			
	Horticulture 1	3	Agronomy 2	3
	IV PHYSICAL and BIOLOGICAL SCIENCE divisional electives			
	French 1 or 5	3	French 2 or 6	3
	German 1 or 5	3	German 2 or 6	3
	V SOCIAL SCIENCE divisional electives			
	French 1 or 5	3	French 2 or 6	3
	German 1 or 5	3	German 2 or 6	3
	Military 1	2	Military 2	2
	Physical Education 3	1	Physical Education 4	1
	Physical Education 1	1		
	Freshman Course 5	1	Freshman Course 6	2
	Physical Education 7	2	Physical Education 8	2
	Physical Education 1	1		

† French or German is optional for Mathematics for students who intend to specialize in Home Economics.

SOPHOMORE YEAR.

The work of the sophomore year is also largely prescribed in order to insure a broad cultural background as possible in preparation for the more specialized training of the last two years. Under the guidance of a major group advisory committee the student begins in this year certain optional choices of electives leading to the special courses of major work which he will later pursue. This course is presented below in tabular form.

TABLE OF SOPHOMORE SUBJECTS.

(Groups A and C are required of all sophomore men; Groups A and D of all sophomore women; and two of the electives of Group B must be selected by each sophomore, with the approval of his major group advisory committee.)

Group	First Semester	Cr.	Second Semester	Cr.
A	English 25 and 29	3	English 26 and 30	3
	Economics 25	3	History 30	3
	Zoology 25 or Physics 25	3	Physiology 32 or Physics 26	3
B	I AGRICULTURE divisional electives			
	Dairy 25 or Poultry 25	3	Animal Husbandry 26	3 or 4
	Bacteriology 31	3	Chemistry 30	3
	Mathematics 27	3	Mathematics 28	3
	Chemistry 25	3	Chemistry 26	3
	II HOME ECONOMICS divisional electives			
	Home Economics 25	3	Home Economics 30	3
	Drawing 31	3	Home Economics 32	3
			Chemistry 30	3
	III HORTICULTURE and LANDSCAPE ARCHITECTURE divisional electives			
	Olericulture 25	3	Pomology 26	3
	Drawing 25	3	Drawing 26	3
	Botany 25	3	Entomology 26	3
			Floriculture 26	3
			Horticulture 26	3
	IV PHYSICAL and BIOLOGICAL SCIENCE divisional electives			
	Mathematics 25	3	Geology 28	3
	Mathematics 27	3	Mathematics 28	3
	Physics 25	3	Physics 26	3
	Chemistry 25	3	Chemistry 26	3
	Zoology 25	3	Zoology 26	3
	Bacteriology 31	3	Physiology 32	3
	Botany 25	3	Chemistry 30	3
			Entomology 26	3
	V SOCIAL SCIENCE divisional electives			
	French 5 or 27	3	French 6 or 28	3
	German 25 or 27	3	German 26 or 28	3
	Sociology 27	3	Agricultural Economics 26	3
	History 25	3	History 28	3
			History 32	3
C	Military 25	2	Military 26	2
	Physical Education 23	1	Physical Education 24	1
D	Physical Education 27	2	Physical Education 28	2

JUNIOR AND SENIOR YEARS.

The work of the junior and senior years is, with certain restrictions, elective under the guidance of a special adviser, who is a member of the advisory committee of the major group which the student selects during his freshman year as his field for professional training. The aim of the last two years is to give to each student as high a degree of proficiency in some one branch of learning as is possible without sacrificing the breadth of knowledge and training which should characterize a well-rounded college course. In order to insure this result each student is required to complete, during his last two years of study, certain requirements for specialization within his major group and certain minimum requirements in other groups:

- I. Agriculture: Departments of Agricultural Engineering; Agronomy; Animal Husbandry; Dairy Industry; Farm Management; Poultry Husbandry.
- II. Home Economics: Department of Home Economics.
- III. Horticulture: Departments of Floriculture; Forestry; Landscape Architecture; Horticultural Manufactures; Olericulture; Pomology.
- IV. Physical and Biological Sciences: Departments of Bacteriology and Physiology; Botany; Chemistry; Entomology, Zoology, and Geology; Mathematics and Civil Engineering; Physics; Veterinary Science.
- V. Social Sciences: Departments of Agricultural Economics; Education; Economics, History, and Sociology; Languages and Literatures.

For purpose of fulfilling the extra group requirements specified below, Groups I to III inclusive are regarded as a unit, since their work is comparable in field and character.

SPECIFIC REQUIREMENTS.

RULE 1. Credits for Graduation.—The minimum number of credits for graduation shall be 72 junior-senior credit hours, in addition to the satisfactory completion of the required courses of the freshman year and of the required and elective groups of the sophomore year.

RULE 2. Credits Each Semester.—Except upon special permission from the Scholarship Committee, no student shall enroll for more than 20 nor less than 16 credits each semester of his junior and senior years.

RULE 3. Specialization.—At the close of his sophomore year each student shall designate some department within his major group in which he desires to specialize, and shall complete, during his junior and senior years, not less than 18 and not more than 36 credits in junior-senior courses offered in that department. In special cases, with the approval of the student's major adviser and the Dean, this requirement may be satisfied by the selection of at least the minimum number of credits from two or more departments of closely related work.

RULE 4. Requirements in Other Groups.—Each student shall complete, during his junior and senior years, not less than 12 credits in other than his major group unit.

RULE 5. Credit in Military Science and Tactics.—Not to exceed 12 Junior-Senior credits in Military Science may be included in the minimum requirements for graduation.

RULE 6. Advisers.—The work of each student will be under the general supervision of his major group advisory committee from the beginning of his sophomore year, and during his junior and senior years under the immediate supervision of a special adviser who shall be some member of that committee and shall represent the department in which the student is to specialize under the terms of Rule 3. The adviser has full authority to prescribe the student's work required by Rules 3 and 4, and may advise the student with reference to his elections under Rule 7.

RULE 7. Free Electives.—Subject to the limitations imposed by Rules 2, 3, 4, and 5, each student may elect during his junior and senior years any courses offered in the catalogue for which he has the necessary prerequisite training.

RULE 8. Registration.—No junior or senior shall register until his course of study is approved by his adviser.

A card for recording the election of courses for each semester will be issued from the Schedule Room. This election card, properly filled out and signed, must be returned to the Schedule Room on or before June 1 of each year for first semester courses, and January 10 for second semester courses.

RULE 9. Changing of Major Group.—Application for change of major group can be made to the Dean in writing at any time; when approved by both major group advisory committees concerned and by the Dean and the Scholarship Committee, the change becomes operative at the beginning of the term following, provided that no change in the selection of a major group may be made by any student after registration day of his senior year.

Description of Courses.

[Heavy-faced Roman numerals indicate the semester in which the course is given. Numbering of courses: 1 to 24, inclusive, freshmen; 25 to 49, inclusive, sophomores; 50 to 74, inclusive, juniors; 75 to 99, inclusive, seniors.]

SPECIAL COURSES FOR FRESHMEN.

1. **I. 2. II. ORIENTATION COURSE.**—The word orientation may be defined as “the determination of one’s bearings or true position in relation to circumstances, ideas, etc.” This course attempts to orient the student to the physical and social world in which he lives and works. During the first semester the subject matter deals primarily with the nature of our universe and the method of thinking used by man in coming to an understanding of it. An attempt is made to establish a time and space perspective and to form a well defined conception of the cosmos and one’s relation to it. A total viewpoint is sought. It is shown that this comes only through a synthesis of the contributions of many subjects, astronomy, geology, chemistry, physics, biology, etc. During the second semester the main theme is man in society. The student is made conscious of his own original nature and of the several institutions which serve that nature. The development of these institutions is traced. The student is urged to identify his own activities with them. There is also an introduction to some of the social problems man now faces because of his attempt to understand and control his physical environment and himself. This semester is really an orientation to the social sciences.

The central thought throughout the year is human life. The aim is to see life as a whole. Since this is the objective no attempt is made to teach the subject matter of any one science. Rather the course seeks to organize around the individual life the material from many sciences without considering the conventional lines separating one from the other. It suggests how from such an organization a fuller understanding of life may arise and how this may lead to the living of life more knowingly and abundantly. It is hoped that by this orientation the student may see unity in the mass and maze of college subjects and that he may be led to plan his course more intelligently. Theoretically, such an orientation should assist the student in organizing his future information and aid him at the end of his senior year in making the final synthesis of his four years of subject matter in terms of his own life.

2 class hours. First semester.

Credit, 2.

3 class hours. Second semester.

Credit, 3.

Assistant Professor LANPHEAR.

5. **I. COLLEGE ADJUSTMENTS.**—For freshman women. A study of the experiences of everyday life in college, to help students recognize various social problems and think in terms of their solution.

1 class hour.

Credit, 1.

Miss SKINNER.

6. **II. VOCATIONAL OPPORTUNITIES FOR WOMEN.**—For freshman women. An outline of the occupational progress of women, with special attention to the opportunities for women in those vocations for which the Massachusetts State College gives foundation preparation.

2 class hours.

Credit, 2.

Miss HAMLIN.

DIVISION OF AGRICULTURE.

Professor RICE.

Agricultural Engineering.

Professor GUNNESS, Assistant Professor MARKUSON, Assistant Professor TAGUE,
Mr. PUSHEE, Mr. NEWLON.

The courses in agricultural engineering are planned to give a working knowledge of those phases of engineering which apply directly to the farm. It is expected that the student will acquire a clear understanding of modern farm practice as it relates to permanent improvements of the farm and the farmstead, and in the selection and use of farm equipment.

Elective Courses.

2. **II. MECHANICAL DRAWING AND SHOP WORK.** (Formerly 27. III.) — For freshmen. Drawing consists of geometric constructions, orthographic projection, isometrics, and the making of working drawings of simple farm equipment. In the shop, instruction is given in the use of carpentry and forging tools, the selection of materials, and the elements involved in framing structures and repair of farm equipment. Students who contemplate taking Agricultural Engineering 75 will find this course helpful.

3 2-hour laboratory periods, credit, 3.

Assistant Professor MARKUSON, Mr. PUSHEE, and Mr. NEWLON.

51. **I. RURAL SANITARY EQUIPMENT.** — For juniors; seniors may elect. This course deals with the problems of water supply, sewage disposal, and ventilation which pertain to the farm and small community. Careful studies are made of water systems and sewage disposal plants and their adaptability to various conditions.

1 class hour.

1 2-hour laboratory period, credit, 2.

Assistant Professor MARKUSON.

52. **II. HOUSE PLANNING AND CONSTRUCTION.** (Formerly 53. II.) — For juniors; seniors may elect. Plan designs of the small house will be made. The arrangement of interior equipment, especially in the kitchen, lighting, heating, water supply, and sewage disposal will be studied, together with a brief history of the house, materials, construction methods, equipment, and architectural styles. Consideration will be given to the economics of house building, including financing and to maintenance and overhead expense.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Assistant Professor MARKUSON.

71. **I. MOTORS.** (Formerly 78. I.) — For seniors; juniors may elect. The course deals with the gasoline engine as used for stationary work, automobiles, and tractors. The theory of the internal combustion engine is taken up in order to emphasize the effect of design and operation on power and economy. The various types of carburetors, ignition, and lubrication systems are studied in detail. Instruction is given by means of lectures and textbooks, and by operating and repairing stationary engines, automobiles, and tractors. Special attention is given to overhauling and repairing. This course also deals with the application of electricity to farm operations including wiring and electric motors; pumping equipment; and refrigeration equipment as used on New England farms.

3 2-hour laboratory periods, credit, 3.

Assistant Professor TAGUE and Mr. PUSHEE.

72. **II. DRAINAGE AND IRRIGATION ENGINEERING.** (Formerly 79. III.) — For seniors; juniors may elect. The course covers the engineering phase of drainage and irrigation. The various systems are studied, and practice is given in the design of drainage and irrigation systems. Field work gives practice in surveying for drains, platting, locating drains, erecting batterboards, and laying tile. Practice is given in assembling equipment for spray irrigation, and the flow of water through nozzles is studied by means of laboratory tests.

1 class hour.

1 2-hour laboratory period, credit, 2.

Assistant Professor MARKUSON.

75. **I. FARM STRUCTURES.** — For seniors; juniors may elect. A study of the strength and durability of concrete, wood, stone, and clay products, and of the mechanical principles underlying their use in farm construction. The design of various farm buildings, such as the general purpose barn, dairy stable, hog house, sheep barn, milk house, etc. In the drafting room, details of construction will be worked out, a study of the mechanics of simple roof trusses will be made, and a complete design of some major farm building will be finished in all essential details. Blueprints of the finished design will be made.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Assistant Professor MARKUSON.

80. **II. DAIRY MECHANICS (1933-34).** (Formerly 81. III.) — For juniors; seniors may elect. A study of dairy machinery, including steam boilers, engines, pumps, traps, refrigeration machinery, and heat-controlling devices. Practice is given in pipe fitting, packing valves, lacing belts, and similar repair jobs on the equipment used in dairy plants. Given in alternate years.
1 class hour.

1 2-hour laboratory period, credit, 2.

Assistant Professor TAGUE and Mr. NEWLON.

83. **I and II. AGRICULTURAL ENGINEERING PROBLEMS.** — Open to seniors only. This course consists of individual problems chosen by the students under guidance of the department. The work is of an advanced nature, supplementing that of the regular agricultural engineering curriculum. Copy of project outline, indicating the number of credits, must be filed with the department and with the Dean at the opening of the semester.

Credit, 3.

The DEPARTMENT.

85. **I. RURAL ELECTRIFICATION.** (Formerly 82. I.) — For seniors; juniors may elect. This course is planned primarily for students who are interested in the application of electricity to agriculture. It includes a study of the generation and distribution of electricity for light and power. Special emphasis is placed on the utilization of electricity on the farm and in rural communities.

2 class hours.

1 2-hour laboratory period, credit, 3.

The DEPARTMENT.

Agronomy.

Professor BEAUMONT, Assistant Professor CUBBON, Assistant Professor DICKINSON, Mr. THAYER.

The courses in agronomy are designed to give instruction concerning the basic knowledge of the soil and its management, fertilizers and their use, and the principal products of the field. An important objective of our undergraduate teaching is to give supporting training to groups specializing in other departments. For undergraduates desiring to specialize in agronomy adequate courses are offered, but for those expecting to go into advanced educational or research work our graduate training is recommended as preferable.

Elective Courses.

1. **I. AGRONOMY.** — For freshmen. An introductory course in agronomy designed to acquaint the student with the broader aspects of field crops and their production. The relation of crops to civilization; classification and uses of field crops; factors affecting plant growth; soil characteristics and crop adaptation; the use of fertilizers; and cultural practices will be studied. Field trips will be taken to the College Farm and nearby farms.

2 class hours.

1 2-hour laboratory period, credit, 3.

The DEPARTMENT.

2. **II. SOILS.** (Formerly 3. III.) — For freshmen. This course is designed to give the student an intimate knowledge of the nature, properties, and management of soils. Classification and some of the broader aspects of utilization of soils will be stressed.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor CUBBON.

51. **I. FIELD CROPS.** (Formerly 50. I.) — For juniors and seniors. A study of methods and problems of production of field crops important in New England. The successful production of good forage is essential to profitable dairy farming. Special emphasis will be given hay, pasture, and other crops important in dairy farming.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor CUBBON.

Prerequisite, Agronomy 1.

52. **II. SOIL UTILIZATION.** (Formerly 53. III.) — For juniors and seniors. A course intended primarily for those not having had other courses in soils. It deals with the nature and properties of soil types, their adaptation to crops, and special problems arising in the management of extreme soil types.

3 class hours. Credit, 3.
Assistant Professor CUBBON.

53. **I. SOIL FERTILITY.** (Formerly 52. II.) — For juniors and seniors. This course deals with factors affecting soil fertility, with special attention to organic matter, soil reaction, and the use of fertilizers. Attempt will be made to meet the special needs of groups of students from other majors.

2 class hours. 1 2-hour laboratory period, credit, 3.
Assistant Professor CUBBON.

54. **II. TURF AND FORAGE GRASSES.** — For juniors and seniors. Designed to give a practical working knowledge of fine turf and forage grasses. The identification of seeds and plants, their ecology and relative value will be emphasized.

2 class hours. 1 2-hour laboratory period, credit, 3.
Assistant Professor DICKINSON.

77. **I. CROP IMPROVEMENT.** (Formerly 78. I.) — For seniors. Theory and practice of the improvement of field crops by breeding and selection.

2 class hours. 1 2-hour laboratory period, credit, 3.
Assistant Professor CUBBON.

Prerequisite, Agronomy 1 and 51.

78. **II. FERTILIZERS.** (Formerly 77. II.) — For seniors; juniors may elect. A study of the source, properties, and behavior of commercial fertilizers and soil amendments. Attention will be given to such questions as home-mixed versus commercial fertilizers, the use of concentrated materials, and the economical purchase of fertilizers.

2 class hours. 1 2-hour laboratory period, credit, 3.
Professor BEAUMONT.

79. **I. JUDGING OF FIELD CROPS.** — For juniors and seniors. A study of varieties, strains and grades of forage, root, tuber, and grain crops in relation to their market value. Utility rather than expected performance of progeny will be stressed. Official U. S. Government standards will be used.

1 2-hour laboratory period, credit, 1.
Assistant Professor CUBBON.

Prerequisite, Agronomy 51.

82. **II. SPECIAL PROBLEMS IN AGRONOMY.** — For seniors taking major work in agronomy.

3 2-hour laboratory periods, credit, 3.
Professor BEAUMONT.

Animal Husbandry.

Professor RICE, Assistant Professor GLATFELTER, Assistant Professor PARSONS, Mr. FOLEY.

The courses in animal husbandry are designed to give the student a thorough grounding in the scientific, practical, and commercial phases of horse, sheep, swine, beef, and dairy cattle production. The choice of supporting courses is governed by the student's ultimate objective. Upon completion of the four years' course, three general fields are open to the graduate. First, the practical field comprising the actual production of livestock and its products or the management of livestock farms; second, the professional field which embraces college, secondary school, or extension teaching, or federal, state, or commercial research; and third, the commercial field comprising all phases of the meat-packing, milk-production, wool or feed industries, including connections with the large companies, farmers' cooperative associations, or the operation of local plants.

Elective Courses.

26. **II. TYPES, BREEDS and JUDGING of LIVESTOCK.** (Formerly 2. II.) — For sophomores. This first course in animal husbandry is designed to acquaint the student with the history, developmental trends, and present status of all the breeds of horses, cattle, sheep, and swine in the United States. It also serves as a survey course showing the magnitude of the livestock industry, and the indispensability of livestock and their manifold products in a modern, civilized country. During May and June trips will be taken on Saturdays to the leading herds of dairy cattle in New England where practice in show ring judging will be given and the three highest ranking students in this judging will represent the college in the intercollegiate Dairy Cattle Judging Contests at the Eastern States Exposition and the National Dairy Show the following fall.
2 class hours.

1 2-hour laboratory period, credit, 3.
Including Saturday trips, credit, 4.
Mr. FOLEY.

51. **I. THE NUTRITION OF FARM ANIMALS.** (Formerly 50. I.) — For juniors; seniors may elect. This course is planned to acquaint the student with the chemistry and physiology of digestion, resorption and assimilation, in work, meat, wool or milk production. The feed requirements of the various classes of livestock in terms of energy, proteins, minerals and vitamins are ascertained, as well as the rôle of the various feeds in meeting these requirements.
3 class hours.

Credit, 3.
Assistant Professor GLATFELTER.

52. **II. THE BREEDING AND IMPROVEMENT OF FARM ANIMALS.** (Formerly 53. III.) — For juniors; seniors may elect. This course is planned to acquaint the student with the facts of reproductive physiology, with the facts and theories of modern genetics, and to show how such knowledge may be utilized for the creation of more beautiful and more efficient animal types.
3 class hours.

Credit, 3.
Professor RICE.

53. **I. MEAT AND MEAT PRODUCTS.** (Formerly 52. II.) — For juniors. This course embraces a study of the market classes and grades of beef cattle, sheep, and swine. It also deals with the manufacture of animals into their various commercial products and the distribution of these products to the consumer. Practice is given in the slaughtering of beef cattle, hogs, and sheep; judging of carcasses; cutting and curing of meats. The practical work is augmented by studies in the grading of fat stock, in packing-house methods, in the magnitude and trends of the meat industry, and in the opportunities of local New England marketing.

2 3-hour laboratory periods, credit, 3.
Mr. FOLEY.

Prerequisites, Animal Husbandry 26 and 51.

56. **II. BEEF AND SHEEP PRODUCTION AND FAT STOCK JUDGING.** (Formerly 76. II.) — For juniors. The purpose of this course is to seek the solution of the various economic, nutritional, genetic, and managerial problems concerned in the production of beef cattle and sheep. During May and June trips will be taken on Saturdays to the leading herds and flocks in New England where practice in show ring judging will be given. The five highest ranking students in this judging will represent the college in the intercollegiate Fat Stock Judging Contests at the Eastern States Exposition and the International Livestock Exposition the succeeding fall.

2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor GLATFELTER.

Prerequisites, Animal Husbandry 26 and 51.

75. **I. HORSE AND SWINE PRODUCTION.** — For seniors. The purpose of this course is to seek the solution of the various economic, nutritional, genetic and managerial problems concerned in the production of horses and swine. The

Part II.

student is called upon to utilize the scientific principles of feeding, breeding, etc., which he has mastered in his first three years of college work in solving the manifold problems concerned in successful livestock production.

2 class hours.

1 2-hour laboratory period, credit, 3.

Mr. FOLEY.

78. II. DAIRY CATTLE AND MILK PRODUCTION. (Formerly 77. III.) — For seniors. The same as Course 75 above but applied to Dairy Cattle and Milk Production.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professors RICE and PARSONS.

80. II. ADVANCED BREED STUDIES. — This course is open only to those specializing in animal husbandry. Some one or more breeds of livestock will be thoroughly studied especially from the standpoint of its genetic make-up and of the selection of a foundation herd or flock.

1 2-hour laboratory period, credit, 1.

Professor RICE.

81. I. 82. II. ANIMAL HUSBANDRY SEMINAR. — Required of students majoring in animal husbandry. Students will prepare original papers and talks on various pertinent topics. Round table discussions of animal husbandry investigational work and practices will be conducted.

1 class hour.

Credit, 1.

The DEPARTMENT.

Dairy Industry.

Professor FRANDSEN, Assistant Professor MACK, Mr. LINDQUIST.

The courses in dairy industry are offered to meet the needs of students interested in the scientific study of handling market milk, and the making of ice cream, butter, cheese, and other dairy products; agricultural college teaching, and experiment station work; high and secondary school teaching; extension work; research and investigational work.

Elective Courses.

25. I. GENERAL DAIRYING. (Formerly 3. III.) — For sophomores. A general course, introductory to all other courses in dairy industry, and for those who wish to take only one course in dairying to get a general knowledge of the subject. The work covers briefly: a study of milk, its secretion, composition, and various tests applied thereto; methods of pasteurizing and handling milk and cream; the use of separators; elements of ice-cream, butter, and cheese making.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor FRANDSEN and Mr. LINDQUIST.

50. II. JUDGING DAIRY PRODUCTS. (Formerly 51. II.) — For juniors; seniors may elect. A study of market standards and grades of dairy products, with practice in judging milk, ice cream, butter, and cheese. The student learns to recognize quality in dairy products, to detect specific defects, and to know their causes and the means of their prevention. A team is chosen from this class to represent the college in dairy products judging contests at the Eastern States Exposition and the National Dairy Industries Exposition.

1 2-hour laboratory period, credit, 1.

Assistant Professor MACK and Mr. LINDQUIST.

52. II. MARKET MILK. — For juniors; seniors may elect. A study of the various phases of the market milk industry: sanitary production, transportation, pasteurization and handling in the city plant, marketing, delivery systems, milk and its relation to public health, inspection, milk laws, food value, and advertising. Cultured milk and other milk drinks also are included. Some milk plants are visited, the cost of the trip not exceeding five dollars.

2 class hours.

2 2-hour laboratory periods, credit, 4.

Mr. LINDQUIST.

75. **I. DAIRY CHEMISTRY (1934-35).** (Formerly 76. I.) — For juniors and seniors. The various physical and chemical properties of milk, milk products, and their components are studied. Testing and control methods commonly used commercially for milk and dairy products are included; moisture and fat determinations, casein, salt, and acid tests, work with the Mojonnier apparatus, and other applied chemical tests are taken up in the laboratory. Given in alternate years.
1 class hour.

2 2-hour laboratory periods, credit, 3.
Assistant Professor MACK.

77. **I. BUTTER AND CHEESE MAKING (1933-34).** — For juniors and seniors. The first half of the semester is devoted to butter making, the remainder to cheese making, condensed and powdered milks. The various phases of the butter industry studied are: separators and cream separation; pasteurization, neutralization, and ripening of cream; preparation of starter cultures; churning, marketing, and scoring of butter; creamery management. The work in cheese making includes Cheddar, cream, Neufchâtel, cottage, processed cheeses, etc. The manufacture of condensed and powdered milk, and commercial casein is also covered. Given in alternate years.
2 class hours.

2 3-hour laboratory periods, credit, 5.
Assistant Professor MACK and Mr. LINDQUIST.

Prerequisite, Dairy 25.

78. **II. ICE-CREAM MAKING.** — For juniors and seniors. The course includes a study of the principles and practices of ice-cream making. The effects of such factors as composition, quality, pasteurization, homogenization, aging, and freezing on the finished product are considered. Sherbets, ices, fancy and individual forms, and all flavors of ice cream are studied. Some time is devoted to refrigeration machinery, delivery equipment, and merchandising methods as they are related to the industry.
2 class hours.

2 2-hour laboratory periods, credit, 4.
Assistant Professor MACK.

79. **I. 80. II. SEMINAR.** — For students majoring in dairy industry. The course consists of a study of research done by the experiment stations, also a review of foreign literature. Students prepare papers on timely dairy subjects. Frequent addresses are made to the class by visiting authorities in dairying.
1 class hour.

Credit, 1.
Professor FRANDSEN.

Farm Management.

Professor FOORD, Assistant Professor BARRETT.

The purpose of the courses in farm management is to acquaint the student with the economic ideas and principles which apply to the organization and operation of the farm business. Farm Management brings together the research and knowledge from the other sciences, and studies them for the purpose of determining how to organize the farmer's resources so as to obtain the maximum economic return.

Elective Courses.

75. **I. FARM ORGANIZATION.** — For seniors. This course analyzes the functions of the farmer as a business proprietor. Some of the problems and principles considered are: comparative advantage, choice and combination of enterprises and factors of production, least cost and highest profit, opportunity costs, farm and building layout, the economical use of funds, and adjustments to production and price cycles.
3 class hours.

Credit, 3.
Assistant Professor BARRETT.

Prerequisite, the required freshman and sophomore work in agriculture or horticulture, or the permission of the instructor.

76. **II. FARM OPERATION AND ADVANCED FARM ORGANIZATION.** — For seniors. The first part of this course further develops the principle of opportunity costs, and includes the use of farm records and accounts as a basis for planning and budgeting,

"scientific management" as applied to efficient farm technique, and the execution of the plans and policies of the organization. The last part of the semester will be given over to a more specific study of the principles and practices outlined in Course 75, with special reference to their application to selected farms. Field trips are required. The approximate expense for travel is five dollars.

1 class hour.

1 4-hour laboratory period, credit, 3.

Assistant Professor BARRETT.

Prerequisite, Farm Management 75.

78. II. SEMINAR. — For seniors majoring in agriculture; others by arrangement. Farm management problems will be considered from the viewpoint of research, extension, and teaching.

1 class hour.

Credit, 1.

The DEPARTMENT.

80. II. SPECIAL PROBLEMS. — For seniors majoring in farm management; others by permission of instructor. This course will usually consist of a study of efficiency on a specific farm but will be adapted to the needs of the individual student. An original semester paper will be required.

2 or 3 hours or equivalent.

Credit, 2 or 3.

Professor FOORD.

Poultry Husbandry.

Professor GRAHAM, Professor SANCTUARY, Assistant Professor BANTA, Mr. VONDELL.

The department aims to give instruction in the science, art, and practices of poultry keeping not only to the men majoring in this department, but also to students majoring in other departments and desiring supporting courses in poultry husbandry. Our major courses prepare men for the successful operation of commercial poultry farms and marketing projects either as owners or managers; for graduate work, teaching, extension and investigational work.

Elective Courses.

25. I. POULTRY JUDGING. — For sophomores. A study of the origin and evolution of our standard breeds and varieties of domestic fowl; judging production quality, using trapnested birds; judging exhibition quality by score card and comparison. One or more poultry farms, an egg-laying contest, and a poultry show will be visited. Poultry judging teams competing in the inter-collegiate contest at Madison Square Garden each January are trained in this course.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Assistant Professor BANTA.

51. I. POULTRY FEEDS AND FEEDING. — For juniors; seniors may elect. A study of the common feeds and the scientific principles underlying the field of nutrition. Recent experimental work and current feeding problems will receive special consideration. For observational practice and accumulation of original data, the management of a pen of birds will be required for a period of a few weeks.

3 class hours.

1 2-hour laboratory period, credit, 4.

Assistant Professor BANTA.

52. II. INCUBATION AND BROODING. — For juniors; seniors may elect. A study of the fundamental principles underlying incubation and brooding practices. The science of physics and general biology is applied to the study of incubation and brooding processes. Students become thoroughly acquainted with modern incubation and brooding equipment through detailed study and operation of typical incubators and brooders. Present-day problems are considered and some are investigated as a part of the class work.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Professor SANCTUARY.

54. **II. POULTRY HOUSING AND SANITATION.** (Formerly 50. I.) — For juniors; seniors may elect. A consideration of the biological needs of poultry from the standpoint of housing, and the economic principles governing designing and construction of poultry houses and equipment for poultry farm buildings. The course also embodies a study of the principles of poultry sanitation, including external parasites and the insecticidal agents for their control.
1 class hour. 1 2-hour laboratory period, credit, 2.
Professor SANCTUARY.

75. **I. MARKET POULTRY AND POULTRY PRODUCTS.** (Formerly 76. I.) — For seniors. A study of market classes of poultry and eggs; preparation of poultry products for market; requirements of different markets; methods of marketing, involving a study of distribution, finances, and business organizations; cold storage and transportation; advertising, prices, and food values. Laboratory exercises in candling, packing, killing, dressing, and similar operations to make the above named factors more concrete. Students are required to fatten pens of chickens by different methods and rations, keeping accurate data of the gains in weight and quality, also the costs of feed and labor, and resultant profit or loss. Competitive judging of the exhibits in the Annual Market Poultry Show, staged by the members of this class, is a feature of the course. When possible, a short trip to Springfield is arranged to study cold storage plants and the handling of poultry products in the local market.
1 class hour. 1 2-hour laboratory period, credit, 2.
Mr. VONDELL.

77. **I. POULTRY BREEDING.** — For seniors. Methods of selection and improvement of poultry are developed through the study of the principles of heredity. Most of the course centers around the progeny test and pedigree method of breeding. Students taking this course participate in the college plant selection in pedigree work. Three breeds of poultry, each pedigreed for from seven to twenty years, furnish practice materials.
3 class hours. 1 2-hour laboratory period, credit, 4.
Professor SANCTUARY.

78. **II. POULTRY FARM ORGANIZATION.** — For seniors. This course embodies the application of economic and business principles to poultry farming. The place and importance of the various branches of well-organized poultry farms and their relation to each other receive special consideration; also the study of surveys and production costs. A trip covering two or three days will be made to representative successful poultry farms. The expense per student is approximately fifteen dollars. This trip is required of each student taking the course for credit.
1 class hour. 1 2-hour laboratory period, credit, 2.
Assistant Professor BANTA.

Prerequisite, Poultry 77.

80. **II. FARM POULTRY.** (Formerly 79. III.) — For seniors; juniors may elect. For those students who desire a general knowledge of poultry husbandry but who cannot devote more than one term to the subject; it is not intended for students specializing in poultry, and such students are admitted only by special permission. Emphasis is placed on the farm flock and its economic management. Utility classification, housing, culling, feeding, hatching, rearing, production, marketing, and disease control receive special consideration.
2 class hours. 1 2-hour laboratory period, credit, 3.
Assistant Professor BANTA.

81. **I. 82. II. POULTRY PROBLEMS.** (Formerly 80. I, II, and III.) — Open to seniors only. This course consists of individual problems chosen by the students under guidance of the department. The work is of an advanced nature, supplementing that of the regular poultry curriculum. Copy of project outline, indicating the number of credits, must be filed with the department and with the Dean at the opening of the semester.

Credit, 1 to 4.
The DEPARTMENT.

DIVISION OF HOME ECONOMICS.

Professor SKINNER.

Home Economics.

Professor SKINNER, Assistant Professor KNOWLTON, Assistant Professor BRIGGS.

The home economics courses offered are planned to meet the needs of (1) those students who are interested in education for homemaking as an integral part of the general education of women; (2) those who are interested in professional or vocational work in which an understanding of home economics is fundamental; (3) those who are interested in preparing for home economics extension service, both junior and adult; (4) those who wish to enter a graduate school leading to professional work. Other departments offer courses planned especially for students in home economics, as follows: House Planning and Construction in the Department of Agricultural Engineering; General Design in the Department of Landscape Gardening; and Food Preservation in the Department of Horticultural Manufactures.

Elective Courses.

1. **I. INTRODUCTION TO HOME ECONOMICS.**—For freshmen. A brief study of the share which women have had in social progress, in order that each student may recognize the importance of her relationships to her own family group, and may become conscious of problems in the modern home which need to be considered.

3 class hours.

Credit, 3.

Miss SKINNER.

2. **II. CLOTHING SELECTION.**—For freshmen. A study of the principles of clothing selection in order to assist each student to choose satisfactorily line, color, and texture. Clothing costs in relation to a student's own wardrobe, hygiene and care of clothing, and the essentials of good grooming are considered.

2 class hours.

1 2-hour laboratory period, credit, 3.

Miss BRIGGS.

25. **I. TEXTILES.** (Formerly 46. **III.**)—For sophomores. A study of fibers, yarns, and fabrics with the aim of developing good judgment in the buying and using of clothing and house furnishing materials.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Miss BRIGGS.

30. **II. FOODS.** (Formerly 3. **III.**)—For sophomores. A study including fundamental principles and comparative methods of food preparation with emphasis on the nutritional and economic aspects of foods. A basic course for further study of foods.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Miss KNOWLTON.

32. **II. APPLIED DESIGN.**—For sophomores. Applications of the principles of design are worked out in specific problems, using various media. Much opportunity is allowed for individual expression. The estimated cost of materials used is five dollars. Students provide all materials subject to the approval of the instructor.

3 2-hour laboratory periods, credit, 3.

Miss BRIGGS.

Prerequisite, Drawing 30 or permission of instructor.

51. **I. FOODS.** (Formerly 40. **III.**)—For juniors. A continuation of Course 30 with a study of foods from the standpoint of the day's meals. Especial emphasis on economy in expenditure of money, time and labor.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Miss KNOWLTON.

52. **II. NUTRITION AND DIETETICS.** (Formerly 51. II.) — For juniors. A study of food needs of the body under varying conditions of size, activity, age and health, and the value of different foods in contributing to these needs. Special emphasis is placed on the relationship of the nutritive value of food to its cost. This course is designed to help students to understand how food selection is related to achieving and maintaining health.
2 class hours.

2 2-hour laboratory periods, credit, 4.
Miss KNOWLTON.

60. **II. HOUSEHOLD EQUIPMENT** (1934-35). — For juniors and seniors. A study of the selection, operation, care, and efficient arrangement of equipment, with an analysis of the time and energy required in various processes. Given in alternate years.
2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor TAGUE.

61. **I. CLOTHING SELECTION AND CONSTRUCTION.** (Formerly 28. I.) — For juniors. A study of art principles as they apply to clothing design. Principles of construction are given through the use of commercial patterns and flat pattern work in the making of garments. Students provide all materials subject to the approval of the instructor.
1 class hour.

2 2-hour laboratory periods, credit, 3.
Miss BRIGGS.

62. **II. HOME FURNISHING.** (Formerly 61. III.) — For juniors. A study of the fundamental principles which underlie the successful planning and furnishing of a satisfying home. Many applications of these principles are worked out in practical problems. Class trips will be taken at an estimated expense of two dollars.
1 class hour.

2 2-hour laboratory periods, credit, 3.
Miss BRIGGS.

75. **I. HOME MANAGEMENT.** (Formerly 76. I.) — For seniors. A study of personal and family standards of living in the modern home, the economic relations of the household, and the use of time, energy, and money as a means to influence the home situation.
3 class hours.

Credit, 3.
Miss SKINNER.

77. **I or II. HOME MANAGEMENT PRACTICE.** — For seniors. Students live in the Home Management House for an interval varying in length from one-half semester to one semester. This course provides an opportunity for a student to assume responsibilities involved in managing a home and to apply the technical and laboratory training of the previous three years. Their activities include budgeting, accounting, buying, planning, preparing and serving meals, care of the house, and social management.

Credit, 4.
Miss KNOWLTON.

Prerequisites, Home Economics 30, 75, and the approval of the department.

80. **II. PROBLEMS OF THE FAMILY.** — For seniors. This is a study of the problems of family life in relation to the modern social organization. This course aims to develop an intelligent social consciousness and a sense of individual responsibility in family relationships.
3 class hours.

Credit, 3.
Miss SKINNER.

81. **I. METHODS OF TEACHING HOME ECONOMICS.** — For seniors, by arrangement with the head of the division. A study of educational objectives especially as applied to the teaching of home economics in junior and senior high schools, with detailed study of organization problems and the selection and arrangement of equipment. This course also includes an evaluation of instructional material,

and the selection and organization of subject matter for secondary schools. A few required trips, estimated cost three dollars.

2 class hours.

1 2-hour laboratory period, credit, 3.

The DEPARTMENT.

83. I. 84. II. PROBLEMS IN HOME ECONOMICS. (Formerly 82. II. and 83. III.) — For seniors who are home economics majors. A more intensive application of home economics to special problems. This course also serves as a beginning of simple research work. For students particularly interested in the teaching of home economics, there may be an opportunity for observation and practice teaching under supervision. Required trips at an estimated cost of five dollars.

2 class hours.

1 2-hour laboratory period, credit, 3.

The DEPARTMENT.

86. II. CHILD CARE AND TRAINING (1933-34). (Formerly 79. II.) — For seniors. A study of the growth and development of the child, the care of children at various ages, treatment in behavior problems, and the influence of environment in shaping personality. Field trips at an estimated cost of two dollars. Given in alternate years.

3 class hours.

Credit, 3.

87. I. ADVANCED CLOTHING PROBLEMS. (Formerly 85. II.) — For seniors. Continuation of clothing selection with especial emphasis on economic problems involved. Costume designing and modeling are included which give opportunity for experimentation in designing. A study is made of available source material. Students provide all materials subject to the approval of the instructor.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Miss BRIGGS.

DIVISION OF HORTICULTURE.

Professor VAN METER.

Floriculture.

Professor THAYER; Assistant Professor HUBBARD, Mr. ROSS.

The courses in floriculture are intended to present a general knowledge of all phases of greenhouse design, construction, heating, and management, the culture of florists' crops (under glass and outdoors), floral decoration and arrangement, and the marketing of plants and flowers. The department aims to train students so that they may take up various phases of commercial floriculture, positions in nursery establishments, and the management of conservatories on private estates, in parks and cemeteries.

Elective Courses.

26. II. GARDEN MATERIALS. (Formerly 25. II.) — For sophomores. A study of the annuals, biennials, herbaceous perennials, bulbs, bedding plants, and roses that are valuable for use in floricultural or landscape gardening work. Methods of propagation, culture, and uses of the various plants are considered; identification of materials; lectures, assigned readings, and reports.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor THAYER and Mr. ROSS.

51. I. GREENHOUSE MANAGEMENT. (Formerly 50. I. and 51. II.) — For juniors; seniors may elect. This course is intended to familiarize students with the methods and principles involved in the management of greenhouses and greenhouse crops; history and development of the floricultural industry; preparation of soils; fertilizers; potting; watering; ventilation; control of insects and diseases; methods of plant propagation; forcing of plants. At some time during the semester the members of the class will be required to take a one-day trip to visit large commercial establishments at an approximate expense of five dollars. Lectures, assigned readings, reports, and laboratory practice.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor THAYER.

52. **II. FLORAL ARRANGEMENT.** — For juniors; seniors may elect. A study of the principles involving the arrangement and use of cut flowers and plants; funeral designs, basket and vase arrangements, table decorations, home, church, and other interior decorations. A study of color and color harmony as applied to such work. Lectures, assigned readings, reports and laboratory practice. This course is limited to ten students, preference being given to major students in Floriculture and Landscape Architecture.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Professor THAYER.

54. **II. GREENHOUSE CONSTRUCTION AND HEATING.** (Formerly 53. I.) — For juniors; seniors may elect. The location, types, arrangement, construction, cost, equipment, heating, and ventilating of greenhouse structures; the drawing of plans and study of specifications for commercial houses and conservatory ranges. Such practical work as glazing and the construction of concrete benches and cold frames is included as facilities allow. Lectures, assigned readings, and problems.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor THAYER.

58. **II. AMATEUR FLORICULTURE.** — This course is intended primarily for major students in the Division of Home Economics, and other women students. Three phases of floriculture will be considered briefly: the arrangement and use of cut flowers for various purposes in the home, house plants and their culture, and the small home garden.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor THAYER.

75. **I. 76. II. COMMERCIAL FLORICULTURE.** — For seniors. A detailed study of the cultural methods for the important commercial cut-flower crops and potted plants. The marketing of flowers and plants, including the management of wholesale markets and retail stores, a study of systems of record keeping, cost analysis, inventory methods, and other phases of this important part of the floricultural industry. Trips may be taken to nearby commercial establishments. The lectures are supplemented with textbooks, assigned readings and problems.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor HUBBARD.

Prerequisite, Floriculture 51.

79. **I. CONSERVATORY PLANTS.** (1934-35.) — Alternates with Course 81. For juniors and seniors. A study of the foliage and flowering plants used in conservatory work; methods of propagation; assigned readings, reports, and identification of materials.

1 class hour.

1 2-hour laboratory period, credit, 2.

Professor THAYER.

81. **I. HERBACEOUS GARDENS AND BORDERS** (1933-34). — Alternates with Course 79. For juniors and seniors. This course is a continuation of Course 26 with emphasis on the uses of herbaceous materials in various types of plantings. Lectures, assigned readings, planning of borders and gardens.

1 class hour.

1 4-hour laboratory period, credit, 3.

Professors THAYER and HUBBARD.

82. **II. SEMINAR.** (Formerly 81. III.) — For seniors majoring in floriculture. Presentation and discussion of research work in floriculture and other related fields, reports on assignments by individual members of the class, and the preparation of a thesis dealing with an assigned subject. Seminars are conducted weekly.

1 class hour.

4 laboratory hours, credit, 3.

Professor THAYER.

Forestry.

Professor HOLDSWORTH.

The courses in forestry are designed for students who desire a knowledge of the management, regulation and improvement of woodlands of moderate area. They are further intended to develop the place of forest cultivation in land utilization and to be explanatory of the general field of forestry for those who plan to become students in graduate schools of forestry.

Elective Courses.

55. **I. THE MANAGEMENT, PROTECTION AND USE OF WOODLANDS.** — For juniors and seniors. Methods of determining the volume and value of the forest growing stock; the determination of growth and yield; the principles of forest regulation and sustained yield; forest protection; forest development and maintenance. The course is presented with especial emphasis on the application of the principles of forestry to New England conditions. Problems in applied forestry are carried out on the Mount Toby Demonstration Forest. Text and assigned readings.

1 class hour.

1 4-hour laboratory and field period, credit, 3.

Professor HOLDSWORTH.

56. **II. THE PRINCIPLES OF SILVICULTURE AND WOOD PRODUCTION.** — For juniors and seniors. The nature of a forest; factors influencing and controlling the growth and development of forest trees and stands; forest effects on site conditions; methods of forest reproduction through silvicultural practice; intermediate cuttings; choice of species for forest use; supplementary seeding and planting; forest sanitation and its relation to silviculture; the products of the forest. The field work in applied forestry is conducted principally on the Mount Toby Demonstration Forest. Visits of inspection are made to certain accessible forests which have been under scientific management for many years.

1 class hour.

1 4-hour laboratory and field period, credit, 3.

Professor HOLDSWORTH.

58. **II. FOREST ECONOMICS AND POLICY.** — For juniors and seniors. The growth and development of forestry from an historic viewpoint; the forest as a natural resource and its place in our economic life; our past and present forest resources; Federal and State forest organization; private forestry; the development of a National Forest Policy. Text, assigned readings. A semester paper, the subject to be selected by the student after conference with the instructor, will be required.

3 class hours.

Credit, 3.

Professor HOLDSWORTH.

Horticultural Manufactures.

Professor CHENOWETH, Mr. RICE.

The courses in Horticultural Manufactures have been planned to give the student (1) training in food preservation sufficient to meet the needs of a general education, and (2) training for technical work in the food industries including business, research, and teaching.

Students who desire the elementary training only as given in (1) above will restrict their work to the first year courses and they will not be required to offer prerequisites other than the required general courses in the sciences. Students who desire to make Horticultural Manufactures their major or specialized subject will be expected to take the full two years' work as outlined, and should consult with the department as to required courses in chemistry and bacteriology.

Elective Courses.

51. **I. FRUIT AND VEGETABLE PRODUCTS.** — For juniors; seniors may elect. This course together with Course 52 gives the student a general elementary knowledge of the science and practice of food preservation. Principles and theories of the various methods of food preservation are the basis for classroom exercises.

The laboratory work during the first semester deals with the preservation of the autumn fruits and vegetables, small fruit products, freezing, and dehydration.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Professor CHENOWETH.

52. **II. MISCELLANEOUS PRODUCTS.** — For juniors; seniors may elect. This is a continuation of Course 51. The laboratory work includes pickles and pickle products, maple products, citrus fruits products, fruit syrups, and the canning of meats, poultry, and the spring vegetables.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Professor CHENOWETH.

Prerequisite, Horticultural Manufactures 51.

61. **I. COMMERCIAL PRACTICES.** — For seniors who specialize in horticultural manufactures. A survey of commercial practices in canning and manufacturing of food products. This will involve a study of equipment, factory arrangement, sanitation, and government regulations, the operation of types of commercial equipment in quantity production.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Professor CHENOWETH.

Prerequisites, Horticultural Manufactures 51 and 52.

62. **II. FOOD PRESERVATION PROBLEMS.** — For seniors who specialize in horticultural manufactures. This is a continuation of Course 61. The class exercises will deal largely with a survey study of the sources of raw materials, commercial methods of manufacture, packing and distribution of the more common foods, also a study of the more important contributions of research. Laboratory work will include the formation of research projects, interpretation of research data. The legal use of adulterants, the simple analysis of foods and the commercial practices as applied to preservation of such materials as are available: fish, meats, poultry, and spring vegetables.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Professor CHENOWETH.

Prerequisite, Horticultural Manufactures 61.

71. **I.** 72. **II. SEMINAR.** — For seniors who specialize in horticultural manufactures. Two seminar sessions are held each week.

2 class hours.

Credit, 2.

The DEPARTMENT.

78. **II. FOOD PRESERVATION.** — For seniors and graduate students. Not open to students who have credit for Horticultural Manufactures 51, 52, or 81. This is a general course in food preservation and intended only for those who desire a broad general knowledge of the subject because of its cultural or practical value.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Mr. RICE.

81. **I. HOME FOOD PRESERVATION.** — For junior women; seniors and graduate students may elect. This course covers the general field of food preservation as applied to the home. A text book is used as a basis for classroom exercises. Laboratory work deals with the canning of fruits, vegetables, meats and poultry; the manufacture of food products including jams, jellies, conserves, marmalades, pickles, fruit butters, etc. The emphasis in both class and laboratory is placed on scientific, economical practices for home food preservation.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Mr. RICE.

82. **II. SPECIAL PRODUCTS.** — For seniors and graduate students. The materials offered in this course are as follows: the home manufacture of fruit preserves, candied and glacé fruits, fruit pastes, confections, candies, and other

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specialties. Approximately one-half the semester is devoted to elementary work in candy making.

2 2-hour laboratory periods, credit, 2.
Professor CHENOWETH and Mr. RICE.

Horticulture.

Professor BLUNDELL, Assistant Professor FRENCH, Mr. LOWRY.

The general subject of horticulture divides naturally into subjects of pomology, floriculture, forestry, landscape gardening, and vegetable gardening. A number of courses relate to more than one of these subjects, and are therefore grouped here under the general designation of horticulture.

Elective Courses.

1. I. PLANT PROPAGATION.—For freshmen. This course serves as an introduction to the field of horticulture, emphasizing the methods and underlying principles involved in the propagation of horticultural plants.

2 class hours. 1 2-hour laboratory period, credit, 3.
Mr. LOWRY.

26. II. PLANT MATERIALS. (Formerly 25. I.)—For sophomores. Detailed study of deciduous and evergreen trees, with special reference to the form and character of mature trees, means of identification, natural associations, and uses of the various types of trees in landscape work.

1 class hour. 2 2-hour laboratory periods, credit, 3.
Professor BLUNDELL.

51. I. PLANT MATERIALS. (Formerly 50. I. and 51. III.)—For juniors; seniors may elect. Detailed study of shrubs and woody vines, and their identification, with especial emphasis given to their adaptability to the various landscape uses, methods of handling, and care.

1 class hour. 2 2-hour laboratory periods, credit, 3.
Professor BLUNDELL.

Prerequisite, Horticulture 26.

54. II. PLANT BREEDING. (Formerly 27. III.)—For juniors and seniors. A study of the principles of inheritance as applied to plants, together with a consideration of the methods used and problems involved in the improvement of horticultural crops.

3 class hours. Credit, 3.
Assistant Professor FRENCH.

76. II. ADVANCED PLANT BREEDING. (Formerly 55. III.)—For seniors. An advanced study of experimental methods, Mendelian analysis, fluctuating variations, mutations, sterility, disease resistance, etc. Laboratory work in the experimental breeding of plants.

2 class hours. 1 2-hour laboratory period, credit, 3.
Assistant Professor FRENCH.

Prerequisite, Horticulture 54.

Landscape Architecture.

Professor WAUGH, Assistant Professor HARRISON, Assistant Professor ARMSTRONG, Mr. ROBERTSON.

The instruction in this department is aimed at two objectives: first, the contribution to general education; second, the preparation of men for the professional practice of landscape architecture. The former objective seems important from the fact that landscape architecture offers an excellent opportunity for the practical discussion of the principles underlying all the fine arts. In the professional courses students are prepared, as well as time permits, to begin work in landscape architecture which leads through field experience or post-graduate study to permanent establishment in that profession.

DRAWING.

Elective Courses.

25. **I. FREE-HAND DRAWING.**—For sophomores; juniors and seniors may elect. Lettering; free-hand perspective; sketching from models; laying flat and graded washes in water colors; water-color rendering.

2 3-hour laboratory periods, credit,
Mr. ROBERTSON.

26. **II. MECHANICAL DRAWING.**—For sophomores; juniors and seniors may elect. Inking exercises; geometric problems; isometric projection; interior sections; shades and shadows; parallel, angular, and oblique perspectives; perspective drawings of buildings. Students should have preparation in plane and solid geometry.

2 3-hour laboratory periods, credit,
Mr. ROBERTSON.

31. **I. ELEMENTARY DESIGN.** (Formerly 30. I.)—For sophomore women. Elementary principles of design, with applications to costume design, interior decoration, etc.

3 2-hour laboratory periods, credit,
Mr. ROBERTSON.

LANDSCAPE ARCHITECTURE.

Elective Courses.

51. **I. TOPOGRAPHY AND MAPPING.** (Formerly 50. I. and 51. II.)—For juniors. Reconnaissance, location, and topographical surveys and mapping. The data desired and the methods used in landscape architecture. Must be followed by Course 52.

3 3-hour laboratory periods, credit,
Assistant Professor HARRISON.

Prerequisites, Drawing 25 and 26.

52. **II. ELEMENTS OF LANDSCAPE ARCHITECTURE.** (Formerly 51. II. and 52. III.)—For juniors. Engineering details; drive design, grade design, drainage, play areas, etc. Study of selected designs, examination of completed work and, when possible, those under construction; field notes or written reports.

3 3-hour laboratory periods, credit,
Assistant Professor HARRISON.

Prerequisites, Landscape Architecture 51 and either Horticulture 51 or advanced Mathematics.

54. **II. GARDEN DESIGN.** (Formerly 53. II.)—For juniors. Fundamental principles of design with application to simple problems in the design of gardens and small home grounds.

3 3-hour laboratory periods, credit,
Professor WAUGH.

Prerequisite, Landscape Architecture 51.

75. **I. THEORY OF LANDSCAPE ART.**—For seniors and graduates. The general theory and application of landscape study, including an examination of the principles underlying all the fine arts.

3 class hours.

Credit,
Professor WAUGH.

76. **II. CIVIC ART.**—For seniors. The principles and applications of modern civic art, including land subdivision, city planning, city improvement, and rural improvement.

3 3-hour laboratory periods, credit,
Assistant Professor ARMSTRONG.

Prerequisites, Landscape Architecture 51 and 52.

79. **I. CONSTRUCTION AND MAINTENANCE (1933-34).**— Alternates with Course 83. For juniors and seniors. Detailed instruction in staking out work; methods of construction and planting; organization, reporting, accounting, estimating, etc.
3 class hours.

Credit, 3.

Assistant Professor HARRISON.

83. **I. ARCHITECTURE (1934-35).** (Formerly 78. II.)— Alternates with Course 79. For juniors and seniors. The history of architectural development, the different historic types, with special reference to the underlying principles of construction and their relation to landscape design. Illustrated lectures, field trips, the study of details, preparation of plates.
3 class hours.

Credit, 3.

Assistant Professor HARRISON.

81. **I. ADVANCED DESIGN.**— For seniors. Grading and planting plans; garden designs and planting.

3 3-hour laboratory periods, credit, 3.

Assistant Professor ARMSTRONG.

Prerequisites, Landscape Architecture 51 and 52.

82. **II. ADVANCED DESIGN.**— For seniors. A series of problems in the design of estates, parks, and small property.

3 3-hour laboratory periods, credit, 3.

Assistant Professor HARRISON.

Prerequisite, Landscape Architecture 81.

Olericulture.

Professor VAN METER, Assistant Professor SNYDER and Mr. TUTTLE.

The object of the courses in olericulture is to train men (1) for the commercial branches of vegetable production and marketing, and (2) for the professional fields of research, extension work, and teaching.

Elective Courses.

25. **I. GENERAL OLERICULTURE.**— For sophomores; juniors and seniors may elect. A study of the factors affecting plant growth which are essential to a thorough understanding of vegetable plants and their culture, or for vocational teaching, or professional work other than teaching.
3 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor SNYDER.

51. **I. OLERICULTURE.**— For juniors; seniors may elect. A study of the principles underlying vegetable production; the vegetable plant, soil and its treatment, plant nutrition, seed, and seedage.
3 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor SNYDER.

52. **II. OLERICULTURE.**— For juniors; seniors may elect. A study of the principles underlying vegetable production; the vegetable plant and its responses to environmental conditions; methods of culture, marketing, storage, and pest control.
3 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor SNYDER.

75. **I. SYSTEMATIC OLERICULTURE.**— For seniors. A critical study of variety identification; nomenclature and classification; variety improvement and seed sources; judging and exhibiting.
3 class hour.

2 2-hour laboratory periods, credit, 3.

Assistant Professor SNYDER.

76. **II. GREENHOUSE CROPS AND PLANT GROWING.**— For seniors. A study of the culture of vegetable plants under glass: in the greenhouse, plant house, hot-

bed, and cold frame; the growing of seedling plants both under glass and in the open for local, retail, or wholesale business.

2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor SNYDER.

78. II. COMMERCIAL OLERICULTURE. (Formerly 77. III.) — For seniors. A study of the problems in the commercial production of vegetables: general culture, fertilizers and manures, machinery, labor, handling, and marketing. One or more trips to important market or truck-growing sections are required. Twenty-five dollars will cover the cost of such trips.

2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor SNYDER.

Prerequisite, Olericulture 25 or 51 or 52.

Pomology.

Professor SEARS, Professor VAN METER, Assistant Professor FRENCH, Mr. ROBERTS.

It is the object of the courses in pomology to give the student a thoroughly practical training, so that he may be able to perform or supervise all of the different operations in connection with the growing and marketing of the various fruits. At the same time he is given a thorough grounding in the scientific principles on which the practical work is based, in order that he may better understand the various practices taught.

Elective Courses.

26. II. SMALL FRUITS. (Formerly 25. III.) — For sophomores; juniors and seniors may elect. A study of the growing of small fruits, including raspberries, blackberries, strawberries, currants, blueberries, and grapes, dealing with such questions as varieties, selecting a site for the plantation, soils, fertilizers, pruning, harvesting, marketing, etc.

2 class hours.

1 2-hour laboratory period, credit, 3.
Professor SEARS.

53. I. GENERAL POMOLOGY. — For juniors; seniors may elect. A study of the most improved practices in fruit production, including such questions as the selection of orchard sites and soils, laying out and setting the orchard, the structure and growth of fruit plants; the bearing habits, pruning, and training of fruits; fertilizers, pollination, winter injury, etc.

2 class hours.

1 2-hour laboratory period, credit, 3.
Professor SEARS and Mr. ROBERTS.

56. II. SPRAYING. — For juniors; seniors may elect. (a) Spraying materials, their composition, manufacture, and preparation for use; the desirable and objectionable qualities of each material; formulas used, cost, tests of purity. (b) Spraying machinery, including all the principal types of pumps, nozzles, hose, and vehicles; their structure and care. (c) Orchard methods in the application of the various materials used, with the important considerations for spraying each fruit and for combating each orchard pest. This course is designed especially to familiarize the student with the practical details of actual spraying work in the orchard.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Mr. ROBERTS.

75. I. SYSTEMATIC POMOLOGY (1934-35). — For juniors and seniors. A study of the more important kinds and varieties of fruits grown in the United States, their relationships and nomenclature. Particular emphasis is placed upon the identification, classification, and value of varieties including a study of the characters of the plant as well as the fruit. Given in alternate years.

1 class hour.

3 2-hour laboratory periods, credit, 4.
Assistant Professor FRENCH.

77. I. COMMERCIAL POMOLOGY (1933-34). — For juniors and seniors. The picking, handling, storing, and marketing of fruits, including a discussion of storage

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houses, fruit packages, methods of refrigeration, grading, and packing. This course also considers the leading American and foreign centers of fruit production as they affect our own fruit industry through competition here or abroad. Given in alternate years.

2 class hours.

1 2-hour laboratory period, credit, 3.
Mr. ROBERTS.

81. I. 82. II. **ADVANCED POMOLOGY.** (Formerly 84. II and 85. III.) — For seniors. A consideration of the scientific principles governing the growth and behavior of fruit-bearing plants. Special attention is given to a critical survey of the more important research work in the field of pomology.

2 class hours.

1 2-hour laboratory period, credit, 3.
Professor VAN METER.

Prerequisite, Pomology 53.

83. I. 84. II. **SEMINAR.** (Formerly 80. I. 81. II. 82. III.) — For seniors majoring in pomology. Advanced study of problems relating to the business of fruit growing. Each student is assigned a major problem in lines of work in which he is particularly interested. He pursues his studies both by reading and research, and the materials obtained will be worked into theses, which are presented to the seminar for discussion. No lectures are given, but seminar meetings are held for one period each week.

1 class hour.

Credit, 1.
The DEPARTMENT.

DIVISION OF PHYSICAL AND BIOLOGICAL SCIENCES.

Professor GORDON.

Bacteriology and Physiology.

Professor GAGE, Professor BRADLEY, Miss GARVEY.

The courses in bacteriology and physiology have been planned to furnish: (1) general training in these subjects for all college students, (2) training for those interested in agriculture, industries, and domestic science, (3) training for prospective students of human or veterinary medicine and public health, (4) training for teachers and laboratory workers in the biological sciences. The courses in bacteriology include introductory and general courses, and advanced work, most of which precedes the applied bacteriology of agriculture, the arts, industry, domestic science, and public health. The course in physiology includes considerations of modern ideas on this subject in relation to human welfare.

BACTERIOLOGY.

Elective Courses.

31. I. **INTRODUCTORY AND GENERAL BACTERIOLOGY.** (Formerly 30. II.) — For sophomores, juniors, and seniors. Designed to make micro-organisms real and significant. The laboratory covers the use and proper care of the compound microscope, the preparation of culture media, methods of sterilizing equipment, the isolation and handling of pure cultures, simple and differential staining, studies on classification and cultural and biochemical studies on type species of pathogenic and non-pathogenic bacteria. Individual practice in the isolation and identification of bacterial forms is a required part of the laboratory assignment. The course aims to provide a basis for bacteriological study and interpretation and to furnish such material as will be valuable in understanding agriculture, domestic science, and public health problems.

2 3-hour laboratory periods, credit, 3.
Professor BRADLEY and Miss GARVEY.

52. II. **ADVANCED BACTERIOLOGY.** (Formerly 51. III.) — For juniors; seniors may elect. A continuation of Course 31. The identification and differentiation of bacterial species by morphological, cultural, physiological, and serological studies. The combined courses give to the student not only a comprehensive

picture of various forms of existing bacteria but develop a specialized technique for their cultivation, isolation, and identification.

2 3-hour laboratory periods, credit, 3.
Professor BRADLEY and Miss GARVEY.

Prerequisite, Bacteriology 31.

61. I. BACTERIOLOGY. (Public Health.) (Formerly 60. I. and 61. II.) — For juniors; seniors may elect. Considers the relation of the human body to its environment in the maintenance of health and the production of disease. The administration and organization of community health, the prevention or control of animal or human diseases of public health significance, are considered. A study of special community health problems and the relationship of these problems to social welfare is discussed.

2 class hours.

Credit, 2.
Professor BRADLEY.

62. II. BACTERIOLOGY. (Public Health.) (Formerly 61. II. and 62. III.) — For juniors; seniors may elect. Sanitation and its relation to agriculture, industry, and public health. The microbiological features of air, water, soil, sewage, and refuse; industrial hygiene and the control of municipal and rural sanitary projects are considered.

2 class hours.

Credit, 2.
Professor BRADLEY.

Prerequisite, Bacteriology 31 or 61.

81. I. 82. II. APPLIED BACTERIOLOGY. (Formerly 82. I. 81. II. and 80. III.) — For seniors; juniors may elect. These two courses covering a full year's work are designed to give the student a working knowledge of present-day applied bacteriology. The work in the laboratory is presented in three distinct sections: (1) soil, (2) food, (3) dairy. In soil, such subjects as the number and development of micro-organisms in different soils, factors influencing their growth and activity and changes wrought upon matter in the production of soil fertility, ammonification, nitrification, etc., receive attention. In food, a study of preservation, fermentation, spoilage and methods of sanitary examination are considered. In dairy, emphasis is placed upon modern methods for examining the sanitary quality of milk and milk products. Groups of bacteria normally present, abnormal and normal fermentations, effect of temperature and the rôle of milk in the transmission of disease are some of the subjects receiving special consideration.

2 3-hour laboratory periods, credit, 3.
Professor BRADLEY or Miss GARVEY.

Prerequisite, Bacteriology 31.

85. I. BACTERIOLOGY. (Serology.) (Formerly 75. I.) — For seniors. This course aims to supplement Course 52 and is planned to complete work essential for the advanced study in bacteriology and physiological science. This course includes the study, preparation, and standardization of such biological products as antigens, agglutinins, precipitins, hemolysins, and complement-fixation bodies, and the use of the same in differential bacteriology and disease diagnoses. Consideration is also given to isohemagglutinins and their relation to human blood groups. Class limited to ten students.

2 3-hour laboratory periods, credit, 3.
Professor GAGE and Miss GARVEY.

Prerequisite, Bacteriology 52.

PHYSIOLOGY.

Elective Courses.

32. II. PHYSIOLOGY. (Formerly 33. III.) — For sophomores. This course presents the subject of physiology from the standpoint of its definition and modern scope. The laboratory demonstrations and practice are planned to meet best the requirements of a preliminary course in physiology. Basic anatomical knowledge essential to physiological interpretations will be considered. Exercises on neuro-

muscular physiology, blood, the circulatory system, and alimentation are included. This course is suited to the needs of students who elect only one course in physiology.

2 class hours.

1 2-hour laboratory period, credit, 3.
Professor GAGE.

75. I. PHYSIOLOGY. (Formerly 63. I. and 64. II.) — For seniors; juniors may elect. The object of this course is to establish a broad basis for physiological study. The study and use of instruments is emphasized. The correlation of physics, chemistry, and biological science to the interpretation of functional activities is particularly considered. Aspects of nerve muscle physiology, hemodynamics, alimentation, intermediate metabolism, and the general plan and structure of the body pertinent to each division of the work will be considered.

2 class hours.

1 2-hour laboratory period, credit, 3.
Professor GAGE.

76. II. PHYSIOLOGY. (Formerly 64. II. and 65. III.) — For seniors; juniors may elect. Physiology of internal and external respiration including studies on calorimetry and basal metabolism. This will be followed by work on the physiology of excretions. An introduction to the physiology of the special senses will be presented. This course is especially planned for students with a broad training in biological subjects.

2 class hours.

1 2-hour laboratory period, credit, 3.
Professor GAGE.

Prerequisite, Physiology 75.

Botany.

Professor OSMUN, Associate Professor CLARK, Assistant Professor TORREY, Assistant Professor DAVIS,
Mr. GILGUT, Miss ANDERSON.

The courses in botany are of three types: (1) those which present a knowledge of the principles of plant life both for their fundamental importance in this and other branches and for their general educational value; (2) those which have for their chief aim direct support of technical courses in agriculture and horticulture; (3) those providing broad, intensive training leading to specialization in the science. Courses in the last group also offer helpful training for students specializing in other sciences and in scientific agriculture.

Required Course.

2. II. INTRODUCTORY BOTANY. (Formerly 3. III. and 25. II.) — For freshmen. Morphology, anatomy, and physiology of seed plants. Also introduction to methods of identifying and classifying plants.

2 class hours.

2 2-hour laboratory periods, credit, 4.
Assistant Professor TORREY.

Elective Courses.

25. I. CRYPTOGAMIC BOTANY. (Formerly 26. III. and 50. I.) — For sophomores; juniors and seniors may elect. Selected forms typifying the slime-molds, bacteria, algæ, fungi, lichens, liverworts, mosses and fernworts. The course has a two-fold purpose: (1) it is intended for students who desire to extend their knowledge to the principal branches of the plant kingdom, thus rounding out a general course of which Course 2 constitutes the first part; (2) it is also planned as an introduction to certain advanced courses for which it is prerequisite.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Professor OSMUN.

Prerequisite, Botany 2.

51. I. DISEASES OF VEGETABLES. — For juniors and seniors. Study of the principal diseases of vegetables occurring in field and greenhouse, with especial attention to those important in Massachusetts, and consideration of combative measures. This course is planned and conducted primarily for students interested in vegetable gardening, but those intending to enter any branch of plant indus-

try should find it of interest. Students who desire to extend their knowledge of plant diseases over a wider range of crops may do so by taking, in addition to this, any or all of Courses 52, 53, and 54.

1 class hour.

1 2-hour laboratory period, credit, 2
Assistant Professor DAVIS.

Prerequisite, Botany 2.

52. **II. DISEASES OF FRUITS.**—For juniors and seniors. The plan of this course is similar to that of Course 51, but it is intended primarily for students interested in pomology.

1 class hour.

1 2-hour laboratory period, credit, 2
Assistant Professor DAVIS.

Prerequisite, Botany 2.

53. **I. DISEASES OF FIELD CROPS.**—For juniors and seniors. The plan of this course is similar to that of Course 51, but it is intended primarily for students interested in field crops.

1 class hour.

1 2-hour laboratory period, credit, 2
Assistant Professor DAVIS.

Prerequisite, Botany 2.

54. **II. DISEASES OF FLORICULTURAL CROPS, ORNAMENTALS, SHRUBS, AND TREES.**—For juniors and seniors. The plan of this course is similar to that of Course 51, but it is intended primarily for students interested in floriculture nursery practice, and forestry.

1 class hour.

1 2-hour laboratory period, credit, 2
Assistant Professor DAVIS.

Prerequisite, Botany 2.

56. **II. DISEASES OF CROPS.** (Formerly 55. III.)—For juniors and seniors. This is a general course in which representative diseases of the principal crop grown in Massachusetts are studied. The plan of the course is otherwise similar to that of Course 51. It is intended for students majoring in entomology and others who desire a brief, general course of this nature.

1 class hour.

1 2-hour laboratory period, credit, 2
Assistant Professor DAVIS.

Prerequisite, Botany 2.

57. **I. MICROTECHNIQUE.** (Formerly 56. I.)—For juniors and seniors. A course in the preparation of microscopic mounts including the celloidin and paraffin methods and involving the use of microtomes and of differential staining.

2 2-hour laboratory periods, credit, 4
Assistant Professor TORREY.

Prerequisite, Botany 25.

59. **I. 60. II. SYSTEMATIC BOTANY OF THE HIGHER PLANTS** (1934-35).—Alternate with Courses 61 and 62. For juniors and seniors. An intensive study of gymnosperms and angiosperms. Lectures deal with the interrelation of the flowering plants and with their ecology, distribution, and economic importance. Laboratory work consists of a critical study of types from the most important natural plant families. Particular emphasis is laid on the flora of Massachusetts. The department herbarium and greenhouses supply material of important tropical forms for study.

2 class hours.

1 2-hour laboratory period, credit, 2
Assistant Professor TORREY.

Prerequisite, Botany 2.

61. **I. 62. II. THE COMPARATIVE ANATOMY OF GREEN PLANTS** (1933-34).—Alternate with Courses 59 and 60. For juniors and seniors. In the lecture an intensive study is directed to the comparative anatomy of green plants from the evolutionary standpoint. Particular emphasis is laid upon the woody form both living and extinct. Of the latter, the department is fortunate in possessing excellent sets of micro-preparations and lantern slides.

2 class hours.

1 2-hour laboratory period, credit, 2
Assistant Professor TORREY.

Prerequisite, Botany 25.

Part II. 51
 63. I. 64. II. SYSTEMATIC MYCOLOGY. — For juniors; seniors may elect. Morphology and development of typical species representing the orders and families of fungi; practice in identification, collection and preservation of fungi; systems of classification; collateral reading.
 class hour. 2 2-hour laboratory periods, credit, 3.
 Assistant Professor DAVIS.

rerequisite, Botany 25.

75. I. 76. II. PLANT PATHOLOGY. — For seniors. Comprehensive study of diseases of plants; training in laboratory methods and technique, including culture work and artificial inoculation of hosts; miscellaneous diagnosis; study of literature and representative life histories of pathogens. Prepares for civil service, experiment station, and college work.
 class hour. 4 2-hour laboratory periods, credit, 5.
 Professors OSMUN and DAVIS.

rerequisite, Botany 25.

77. I. 78. II. PLANT PHYSIOLOGY. (Formerly 78. I. 79A. II. and 79B. III.) — For seniors; juniors may elect. Study of the factors and conditions of (a) plant nutrition, including the taking up of water and mineral substances, the assimilation of carbon and nitrogen, and the release of energy due to the processes of dissimilation; (b) plant growth, including the influence of internal and external factors on growth, the development of reproductive and vegetative organs; (c) plant movements, including those due to the taking up of water, and those of both motile and fixed forms in response to external stimuli. Weekly conferences are held, at which students report on assignments to original sources in the literature.
 class hours. 3 2-hour laboratory periods, credit, 5.
 Associate Professor CLARK.

rerequisites, Botany 25; Chemistry 51.

80. II. PLANT PHYSIOLOGY. (Formerly 79B. II. and 80B. III.) — For seniors; juniors may elect. A briefer course than Course 77 and 78, designed especially for students in horticulture, agronomy, and floriculture, and aiming to give the underlying principles of plant physiology which will supply the scientific basis for the manifold practices in the various fields of plant culture.
 class hours. 2 2-hour laboratory periods, credit, 4.
 Associate Professor CLARK.

rerequisite, Botany 2; Chemistry 30.

81. I. PLANT ECOLOGY. — For seniors. Study of plants in relation to their environment, with special emphasis on the newer field studies, which have given increasing insight into the physical and chemical factors as they influence growth and development in the field and the adaptability of plants to changes in their normal environment. The various types of plant formations and successions are studied, as well as the mutual and antagonistic relations of certain plants.
 class hour. 1 2-hour laboratory period, credit, 2.
 Associate Professor CLARK.

rerequisite, Botany 2.

84. II. THE FERNS (1933-34). — For seniors; juniors may elect. Intensive study of the morphology, life-history, and taxonomy of the fern plants, with especial attention to the fern flora of New England. Given in alternate years.
 class hour. 1 2-hour laboratory period, credit, 2.
 Professor OSMUN.

rerequisite, Botany 25.

Chemistry.

Professor CHAMBERLAIN, Professor PETERS, Assistant Professor SEREX, Assistant Professor FESSENDEN, Mr. PARROTT, Mr. REDMON.

In the courses in chemistry, emphasis is laid on both their educational and their vocational value. The courses in the freshman year deal with fundamental principles and give the student such an understanding of the subject as

will enable him to appreciate the relation of chemistry to the other sciences and to agriculture and industry. The more advanced courses, including quantitative analysis, organic, physiological, and physical chemistry, are for those who intend to take up graduate study, to become teachers and workers in the allied sciences, or who desire to follow chemistry as a vocation. Those completing the undergraduate courses are fitted for positions in the agricultural industries—fertilizer, feed, and insecticide manufacture—as well as in other lines of industry, and in the State experiment stations, Federal departments, commercial laboratories, and in high school teaching. Postgraduate students are prepared for positions as teachers in colleges, and for more advanced positions in industry and in the experiment stations.

Required Courses.

1. **I. 2. II. GENERAL CHEMISTRY.**—For freshmen who have not had chemistry and who begin the subject in college. It presents an introduction to the fundamental chemical laws, together with a study of the typical acid- and base-forming elements and their compounds. The second semester contains some of the material given in Courses 3 and 4. Course 2 is optional with Orientation 2, second semester.

2 class hours.

2 2-hour laboratory periods, credit, 4

Mr. PARROTT and Mr. REDMON.

3. **I. 4. II. GENERAL CHEMISTRY.** (Formerly 4. I. and 5. II.)—For freshmen who have had chemistry in preparatory or high school. A review of general chemistry with special emphasis on the fundamental laws and theories, periodic system, atomic structure, properties of solutions, ionization and equilibria. The laboratory work for the first semester includes exercises illustrating and emphasizing the subject matter of the course. In the second semester the laboratory work will be divided into two main types: the first half will consist of general cation analysis; the last portion of the semester the work will be of a synthetic character. Course 4 is optional with Orientation 2, second semester.

2 class hours.

2 2-hour laboratory periods, credit, 4

Assistant Professors SEREX, FESSENDEN, and Mr. REDMON.

Elective Courses.

25. **I. QUALITATIVE ANALYSIS.**—*Basic.*—For sophomores. The systematic analysis of metallic salts, presented from the ionic viewpoint. A close study of the tests used in the separation and identification of the metals, and the application of these tests to unknown mixtures. This course should be taken by all intending to follow chemistry as a vocation.

1 class hour.

2 2-hour laboratory periods, credit, 2

Assistant Professor SEREX.

Prerequisite, Chemistry 2 or 4.

26. **II. QUALITATIVE ANALYSIS.**—*Acidic.*—For sophomores. A continuation of Course 25.

1 class hour.

2 2-hour laboratory periods, credit, 2

Assistant Professor SEREX.

30. **II. ORGANIC AGRICULTURAL CHEMISTRY.**—For sophomores; juniors and seniors may elect. Embraces the study of the most important groups of organic compounds of plants and animals, the composition of plants, the chemistry of plant growth, plants as food and as industrial material, the composition of animals, the chemistry of digestion, also the study of some of the products related to plants and animals, such as milk, butter, cheese, sugar, and alcohol. The treatment of the subject is general, avoiding (so far as possible) complicated chemical facts and relationships, and endeavoring simply to make the student acquainted with the general chemistry of plants and animals and agricultural processes and products.

3 class hours.

Credit,
Mr. PARROTT.

51. I. 52. II. ORGANIC CHEMISTRY. — For juniors; seniors may elect. A systematic study, both from texts and in the laboratory, of the more important compounds in the entire field of organic chemistry. Especial attention is given to those compounds which are found in agricultural products or are manufactured from them. These include alcohols, acids, esters, fats, carbohydrates, and proteins. In the second semester compounds in the benzene series are considered. The work forms a foundation for courses in physiological chemistry and agricultural analysis, and is especially planned for those majoring in chemistry or the other sciences.

3 class hours.

2 2-hour laboratory periods, credit, 5.

Professor CHAMBERLAIN.

Prerequisite, Chemistry 2 or 4. Chemistry 26 is prerequisite for those majoring in chemistry.

61. I. 62. II. QUANTITATIVE ANALYSIS. — For juniors; seniors may elect. The course includes gravimetric and volumetric analysis. The gravimetric determination of chlorine, sulfur and iron; volumetric analysis with acids and bases; indicators, hydrogen-ion concentration and pH; analysis of limestone; the use of potassium dichromate, permanganate and iodide as reagents; chemical calculations and problems; water analysis.

1 class hour.

2 4-hour laboratory periods, credit, 5.

Professor PETERS.

Prerequisite, Chemistry 25. Chemistry 26 is prerequisite for those majoring in chemistry.

75. I. PHYSICAL CHEMISTRY. — For seniors. A study of the fundamental theories and laws of physical chemistry, together with laboratory work which includes the important methods of physicochemical measurements.

3 class hours.

1 4-hour laboratory period, credit, 5.

Assistant Professor SEREX.

Prerequisite, Chemistry 61.

79. I. PHYSIOLOGICAL CHEMISTRY. (Formerly 80. I.) — For seniors. Supplementary to Courses 51 and 52. For those who expect to take up scientific work in microbiology, botany, agronomy, animal husbandry, etc., and who have had Courses 51 and 52, it gives acquaintance with the chemistry of the physiological processes in plants and animals, by means of which some of the important organic compounds studied in Courses 51 and 52 are built up in the living organism or are used as food by it. In the lectures, the study of food and nutrition as related to both human and domestic animals is the principal subject. In the laboratory, experimental studies are made of both animal and plant materials and processes.

3 class hours.

2 2-hour laboratory periods, credit, 5.

Professor CHAMBERLAIN.

86. II. REVIEW OF GENERAL CHEMISTRY. — For seniors. Primarily for students majoring in chemistry; others may elect by permission of the instructor. A knowledge of physical chemistry is desirable. The review of general chemistry is largely theoretical. Some subjects may be enlarged by special lectures, such as atomic structure, Werner's co-ordination theory, crystal structure as shown by X-rays.

2 class hours.

Credit, 2.

Professor PETERS.

88. II. HISTORY OF CHEMISTRY. (Formerly 87. III.) — For seniors. An historical and biographical study of chemistry and chemists. The aim of the course is: (1) to give the student a comprehensive view of the science as a whole, through a study of the development of new ideas and the establishment of new theories and laws; and (2) to arouse an enthusiastic interest in the subject and an appreciation of the true spirit of scientific research, through a sympathetic presentation of the work and lives of the great chemists who have been the creators of the chemistry of today. The course will consist of lectures,

supplemented by systematic correlated reading and the preparation of reports or essays.

2 class hours.

Credit, 2

Professor CHAMBERLAIN.

91. I. 92. II. INTRODUCTION TO RESEARCH. (Formerly 90. II. through 97. III.) — For seniors majoring in chemistry. The aim of the course is to give the student an opportunity to learn the purpose and methods of research. To each student is assigned some special subject or problem in one of the following fields of chemistry, viz., analytical, biochemical, inorganic, organic, physical. A careful study of the literature goes hand in hand with the working out of the problem in the laboratory. May be elected either semester, but if elected the first, the same subject must be continued in the second.

10 laboratory hours, credit, 5.

The DEPARTMENT.

Entomology, Zoology, and Geology.

Professor GORDON, Professor ALEXANDER, Professor CRAMPTON, Assistant Professor SWEETMAN, Assistant Professor WARFEL, Assistant Professor KELLOGG, Miss MORSE.

Courses in entomology are for two purposes: (1) The introductory course aim to give the students a general knowledge of insects, particularly in their relations to man, his crops, his domestic animals, and his health. (2) More advanced courses are intended to train students desiring to specialize in entomology to become United States, State, or experiment station entomologists, teachers foresters, tree wardens, entomologists connected with insecticide-manufacturing companies, consulting entomologists, or to occupy other positions where an expert knowledge of insects is called for. The beekeeping courses are offered with the following aims: (1) To meet the increase in vocational opportunities for the production of bees or honey as a business. (2) To study the beekeeping need of fruit and truck-crop industries and the part that bees play in the pollination of flowers. (3) To acquaint the student with a recreational field of many phases which can be made profitable.

The offerings in zoology comprise (1) two introductory courses intended primarily for sophomores, and (2) a number of distinct and somewhat special courses of a more advanced nature.

ENTOMOLOGY.

Elective Courses.

26. II. GENERAL AND FIELD ENTOMOLOGY. (Formerly 26. II. and 28. III.) — Primarily for sophomores intending to major in one of the biological sciences; other sophomores, juniors, and seniors may elect. For students who desire some knowledge of insects but cannot give more than one semester to the subject; also an introduction to the later courses for those who intend to follow entomology further. Two lectures throughout the semester are devoted to a brief survey of the entire field of entomology; structure and metamorphosis; the more important methods and materials for control of injurious species; a survey of the more conspicuous and important insects with particular attention to the fauna of New England. A laboratory period will be devoted to the preparation and formation of a collection of insects. Until about April 10th, this work will be done indoors and will consist of lectures and practical work preparatory to the field work after that date. Collections made by the students are studied in later courses. 2 class hours.

1 2-hour laboratory period, credit, 1

Professor ALEXANDER.

51. I. PESTS OF SPECIAL CROPS. (Formerly 50. I.) — For juniors and seniors not majoring in entomology. The laboratory work in this course is largely individual. Students majoring in subjects other than entomology, who desire a more complete knowledge of the insects connected with their major lines of work, can obtain it through this course. Work consisting of a critical study of the important economic insect pests leads to an ability to recognize their different stages, and their work, and to a knowledge of the best methods

for their control. Work of this nature is available on the insects attacking field crops, market-garden crops, tree fruits, small fruits, shade trees and shrubs, forest trees, flowers, the domestic animals, household articles, and man.

2 2-hour laboratory periods, credit, 2.
Assistant Professor KELLOGG.

Prerequisite, Entomology 26.

52. II. FOREST AND SHADE-TREE INSECTS. (Formerly 75. III.) — For juniors; seniors may elect. The lecture work deals with the principles and methods of controlling insects which attack forests and forest products, shade trees, etc. The laboratory periods are devoted to a study of the more important species, their identification, biology, and specific control measures. One entire Saturday for a field excursion is required.

1 class hour. 2 2-hour laboratory or field periods, credit, 3.
Professor ALEXANDER.

Prerequisite, Entomology 26; 55 and 57 desirable.

53. I. PESTS OF SPECIAL CROPS. (Formerly 51. II.) — For juniors majoring in entomology; seniors may elect. Individual laboratory work on the more important insect pests in this country, together with the preparation and presentation of bulletin material on the same.

2 2-hour laboratory periods, credit, 2.
Assistant Professor KELLOGG.

Prerequisite, Entomology 26.

54. II. ADVANCED ENTOMOLOGY. (Formerly 58. II. and 83. I.) — For juniors. Two distinct subjects, (1) Medical entomology: diseases of man and animals that are transmitted by insects and other arthropods; (2) Coccidology: scale insects, their structure, habits; methods of mounting; identification.

2 class hours. 2 2-hour laboratory periods, credit, 4.
Professor CRAMPTON.

Prerequisites, Entomology 26, 55, and 57.

55. I. 56. II. CLASSIFICATION OF INSECTS. (Formerly 52. I. 55. II. and 57. III.) — For juniors majoring in entomology. Laboratory work on the identification and classification of certain of the major orders of insects.

2 2-hour laboratory periods, credit, 2.
Professor ALEXANDER.

Prerequisite, Entomology 26, accompanying Entomology 57.

57. I. INSECT MORPHOLOGY. (Formerly 53. I.) — For juniors majoring in entomology, and for a limited number of non-majors having the prerequisite. The lectures treat of the external anatomy of insects, particular stress being given to those parts needed in classification, for use in the parallel Course 55. In the laboratory, the external anatomy of the more important groups is studied, with emphasis on those characters used in the determination of insects.

1 class hour. 2 2-hour laboratory periods, credit, 3.
Professor CRAMPTON.

Prerequisite, Entomology 26.

75. I. ADVANCED ENTOMOLOGY. (Formerly 59. II. and 76. I.) — For seniors. Two distinct subjects, (1) Internal anatomy: a study of the organology of insects; (2) Insect physiology: a consideration of the organs of the insect body and their functions, with especial reference to respiration and nutrition; the relationship of physiology to behavior, biochemistry, and biophysics.

3 class hours. 1 2-hour laboratory period, credit, 4.
Professors CRAMPTON and SWEETMAN.

Prerequisites, Entomology 26, 54, and 57.

76. II. ADVANCED ENTOMOLOGY. (Formerly 78. III. and 84. III.) — For seniors. Two distinct subjects, (1) The immature stages of insects, with particular stress on their structure and recognition; (2) Classification of the minor orders of

insects. Taxonomy of all insect groups not earlier considered in Courses 55 and 56.
1 class hour.

2 2-hour laboratory periods, credit, 3.

Professors CRAMPTON and ALEXANDER.

Prerequisites, Entomology 26, 55, 56, and 57.

77. I. ADVANCED ENTOMOLOGY. — For seniors. Studies of the life history, habits, and methods of control of the important insect pests of the United States; recognition tests of these pests; a study of the literature; methods of bulletin and thesis preparation.

2 2-hour laboratory periods, credit, 2.

Professor ALEXANDER.

Prerequisites, Entomology 26, 52, 53, 54, 55, and 57.

78. II. INSECTICIDES AND THEIR APPLICATION. (Formerly 79. I.) — For seniors; qualified juniors may elect. Composition, preparation, and methods of application of insecticides; other control measures.

2 class hours.

Credit, 2.

Assistant Professor SWEETMAN.

Prerequisites, Entomology 26; Chemistry 51 and 52.

79. I. INSECT ECOLOGY AND BIOLOGICAL CONTROL. (Formerly 80. I. and 81. II.) — For seniors. The ecological work considers the relation of the insect to its environment, covering such topics as definitions, present status of the subject, factors of the environment, as temperature, moisture and light; biotic potential; environmental resistance; terrestrial and aquatic insect communities; applied ecology. In the second part of the semester, the problem of biological control is begun, this treating of the types of parasitic organisms, insect parasites; predators; and similar matter.

3 class hours.

Credit, 3.

Assistant Professor SWEETMAN.

Prerequisite, Entomology 26.

80. II. BIOLOGICAL CONTROL AND INSECTARY PRACTICE. (Formerly 81. II. and 82. III.) — For seniors. A continuation of Course 79. The work on biological control is concluded, discussing problems such as insect diseases; other organisms as parasites of insects; the natural ecological status of insect parasitism and the economic status of parasites. In the laboratory, the students are assigned individual problems which are conducted on a research basis. These problems may deal with any of the following phases: physiology, insecticides, ecology, biological control, or applied entomology.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Assistant Professor SWEETMAN.

Prerequisite, Entomology 79.

90. II. EVOLUTION. — For seniors; juniors may elect. In order to demonstrate the universal scope and operation of the laws of evolution, the course includes a brief sketch of the probable origin and evolution of matter as viewed in the light of modern physical and chemical research; the evolution of the solar system, leading to the formation of the earth; the changes in the earth, preparatory to the production of life; the physical and chemical basis of life; the probable steps in the formation of living matter, and the theories concerning it; the evolution of living things; the developmental history of man, and of the races of mankind; the evolution of human intelligence, languages, culture, institutions, etc., and man's probable future in the light of his past development. Especial consideration is given to the factors of evolution, the basic principles of heredity, variation, and similar topics, with particular reference to their application to human welfare; and the recent contributions in the field of entomology to the advancement of our knowledge of these fundamental principles are briefly reviewed.

2 class hours.

Credit, 2

Professor CRAMPTON.

BEEKEEPING.

Elective Courses.

66. **II. INTRODUCTORY BEEKEEPING.** (Formerly 65. III.) — For juniors and seniors. In the classroom a study is made of the evolution of the bee, its anatomy and physiology, the races and types of bees, the history of beekeeping, the organization of the colony, and the life of the individual bee. Work in the laboratory and apiary will include a study of the equipment necessary for beekeeping, pollination and pollen-producing plants, nectar-producing plants, and spring management of colonies. Each student will be given an opportunity to observe and handle bees for himself. During the first half of the semester lectures will be substituted for some of the laboratory periods. To be complete, this course should be followed by Course 85.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Assistant Professor KELLOGG.

85. **I. INTRODUCTORY BEEKEEPING.** — For seniors. A continuation of Course 66. The classroom work consists of lectures and readings in fall management, wintering of colonies, care of the honey crop, the characteristics of honey and wax, and bee diseases. Work in the apiary will include fall management of colonies, wintering, and in the laboratory studies will be made on the physical and chemical characteristics of honey and wax, with some simple biometrical problems.

2 class hours.

1 2-hour laboratory period, credit, 3.
Assistant Professor KELLOGG.

Prerequisite, Entomology 66.

86. **II. ADVANCED BEEKEEPING.** — For seniors. Advanced studies are made in important beekeeping problems, such as anatomy and physiology; bee behavior; diseases, queen-rearing; pollination and biometry. Students taking this course will be encouraged to carry on individual work in their particular problems.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Assistant Professor KELLOGG.

Prerequisites, Entomology 66 and 85.

ZOOLOGY.

Elective Courses.

25. **I. ELEMENTS OF ZOOLOGY.** (Formerly 26. I. and 27. II.) — For sophomores; juniors and seniors may elect. This course or its equivalent is prerequisite to all other courses in zoölogy or entomology. It consists of an elementary treatment of the principles of animal biology, and provides a measure of preparation for such subsequent studies as assume some acquaintance with the phenomena of animal life.

2 class hours.

1 2-hour laboratory period, credit, 3.
Professors GORDON, WARFEL, and Miss MORSE.

26. **II. FORMS OF INVERTEBRATE ANIMALS.** (Formerly 28. III.) — Required of sophomores specializing in zoölogy and entomology; other sophomores, juniors, and seniors may elect. This course is designed chiefly to afford a synoptic view of the main groups of non-vertebrated animals, and is intended for future students of entomology, zoölogy, and general biology.

1 class hour.

2 2-hour laboratory periods, credit, 3.
Assistant Professor WARFEL.

Prerequisite, Zoölogy 25.

50. **II. ELEMENTS OF MICROSCOPIC TECHNIQUE.** — For juniors; seniors and graduate students may elect. Open to students upon consultation with the department. The course consists of a series of practical exercises in preparing animal tissues for microscopic examination, and a study of principles and methods involved in such work.

2 2-hour laboratory periods, credit, 2.
Miss MORSE.

Prerequisite, Zoölogy 25.

65. I. 66. II. **COMPARATIVE VERTEBRATE ZOOLOGY.** — For juniors, seniors, and graduate students. The work is arranged to run through the year and is adapted to the needs of premedical students. The laboratory work deals briefly with the simple Chordates, with particular emphasis on *Amphioxus*, treats the various organs and organ systems of the dogfish in detail, and proceeds as soon as practical to the dissection of the mammal. Features of development in vertebrates and comparisons with other vertebrate forms, so far as these are essential to an understanding of basic features of vertebrate morphology and mammalian structure, are treated in classroom and laboratory discussions.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Assistant Professor WARFEL.

Prerequisite, Zoölogy 25.

69. I. 70. II. **COMPARATIVE INVERTEBRATE ZOOLOGY.** — For juniors, seniors, and graduate students. The course is designed to give a broader survey of the field of invertebrate zoölogy than is offered in Course 26, and is intended for those who are especially interested in this field. Marine, fresh water, and terrestrial forms, living or fossil, may be included. Course 26 is not prerequisite, but for students who have not had Course 26 a somewhat different program will be arranged to run through the year. Those who have had Course 26 may arrange to take work running through the year, or for either semester. The course in invertebrate zoölogy may be supplemented by work in general ecology in Courses 91 and 92.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Miss MORSE.

Prerequisite, Zoölogy 25.

75. I. 76. II. **VERTEBRATE EMBRYOLOGY.** — (For seniors and graduate students; juniors may elect. Students are admitted to these courses only upon consultation with the department. The work is arranged to run through the year. Students may take Course 75 without continuing with Course 76, but may not elect Course 76 without having had Course 75 or its equivalent. The work of the first semester reviews general embryological principles and deals with the chief features of development in *Amphioxus*, the frog, and early stages of the chick. The work of the second semester deals with the study of the later stages of the chick and early stages of development in mammals.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Professor GORDON.

Prerequisite, Zoölogy 25.

80. II. **ORNITHOLOGY.** (Formerly 79. III.) — For juniors; seniors and others may elect. The orders of birds, based on the American Ornithologists' Union Check-List of North American Birds; ordinal characters of birds; families and family characters of Passerine birds; origin and relationships, adaptative radiation, migrations, distribution, and habits of birds. This course is conducted by means of lectures, practical exercises in the museum, assigned reading, and studies in the field.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Professor GORDON.

Prerequisite, Zoölogy 25.

91. I. 92. II. **SPECIAL PROBLEMS IN ZOOLOGY OR ENTOMOLOGY.** (Formerly 85. I. 86. II. 87. III.) — For seniors and graduate students; juniors may elect. Juniors and seniors who are especially interested in the field of zoölogy, and graduate students who wish to take a minor in this subject, may arrange for special work.

Credit, 2 or 3.

The DEPARTMENT.

Prerequisite, Zoölogy 25.

GEOLOGY.

Elective Courses.

Each of the courses described below is distinct, and a student may take only one, or any two, or all three, in any sequence. Course 28 is recommended for those

who plan to take only one course in physical geology; it is also considered desirable as a first course for those who plan to take either petrology, or historical geology, or both.

28. **II. INTRODUCTORY GEOLOGY.** (Formerly 51. II.) — For sophomores; juniors and seniors may elect. This is a general course in physical geology. It deals in an elementary way with the different classes of rocks, and treats more fully of geological agents and processes, and the history of development of land forms.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor GORDON.

51. **I. ELEMENTS OF PETROLOGY.** (Formerly 50. I.) — For juniors, seniors, and graduate students. The various important rock-forming minerals are studied first. Then follows a discussion of the different kinds of igneous, sedimentary, and metamorphic rocks, with consideration of their petrographic distinctions, modes of occurrence, and structural features. This course assumes an elementary knowledge of chemistry.

1 class hour.

2 2-hour laboratory periods, credit, 3.

Professor GORDON.

52. **II. HISTORICAL GEOLOGY.** — For juniors, seniors, and graduate students. In this course the principal events in the physical history of North America are reviewed in chronological sequence, with a survey of the plant and animal life of the past.

3 class hours.

Credit, 3.

Professor GORDON.

Mathematics and Civil Engineering.

Professor OSTRANDER, Professor MACHMER, Assistant Professor MOORE, Mr. BOUTELLE.

The work of the freshman year is required. It is intended to furnish the necessary drill and groundwork needed for many of the scientific and practical courses of other departments. Thoroughness and accuracy are insisted upon. The advanced work in mathematics is taught from a practical standpoint, and many of its applications to other subjects are given. The courses in surveying and civil engineering are given to furnish the groundwork for a professional career. Special emphasis is given to the subjects bearing on highway construction and maintenance.

Required Courses.

1. **I. HIGHER ALGEBRA.** — For freshmen. A brief review of radicals, quadratic equations, ratio and proportion, and progressions; graphs, binomial theorem, summation of series, variation, determinants, permutations and combinations, probability, logarithms, and theory of equations.

3 class hours.

Credit, 3.

Professors MACHMER, MOORE, and Mr. BOUTELLE.

2. **II. PLANE TRIGONOMETRY AND MATHEMATICAL ANALYSIS.** — For freshmen. The trigonometric functions as lines and ratios, proofs of the principal formulas, transformations, inverse functions, use of logarithms, the applications to the solution of right and oblique triangles, practical applications, trigonometric equations. This is followed by a brief study of some of the different modes of variation, finding the exact or approximate relations (equations) between the varying quantities, particularly as illustrated by the use of the graph. Also a review of methods of computation, with special emphasis on short processes and the making of close approximations, and the use of the slide rule.

3 class hours.

Credit, 3.

Professors MACHMER, MOORE, and Mr. BOUTELLE.

Elective Courses.

25. **I. PLANE SURVEYING.** (Formerly 26. II.) — For sophomores; juniors and seniors may elect. The elements of the subject, including the adjustment and use of the usual instruments. Textbook, lectures, and field work.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professors OSTRANDER and MOORE.

27. **I. ANALYTICAL GEOMETRY.** (Formerly 28. I.) — For sophomores; juniors and seniors may elect. A discussion of the line, circle, conic sections, and the higher plane curves.

3 class hours.

Credit, 3.

Professors MACHMER, MOORE, and Mr. BOUTELLE.

28. **II. DIFFERENTIAL CALCULUS.** (Formerly 29. II.) — For sophomores and juniors; seniors may elect. The basic ideas and methods of the differential calculus. The course aims to give the student a realization of the power of the calculus as an instrument for dealing with problems of geometry and the physical sciences.

3 class hours.

Credit, 3.

Assistant Professor MOORE.

Prerequisite, Mathematics 27.

51. **I. DIFFERENTIAL AND INTEGRAL CALCULUS.** (Formerly 30. III.) — For juniors; seniors may elect. A continuation of Mathematics 28 into the field of the integral calculus, with special emphasis on applications to problems of physics and chemistry.

3 class hours.

Credit, 3.

Assistant Professor MOORE.

Prerequisite, Mathematics 28.

53. **I. ELEMENTARY STRUCTURES.** — For juniors; seniors may elect. An elementary course in the stresses in roofs and bridges. Textbook and lectures.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor OSTRANDER.

54. **II. ROADS AND RAILROADS.** (Formerly 77. II.) — For juniors; seniors may elect. Highway surveying, curves, earthwork, pavements. Textbook, lectures, and field work.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor OSTRANDER.

Prerequisite, Mathematics 25.

56. **II. MATERIALS OF CONSTRUCTION, FOUNDATIONS, AND MASONRY.** (Formerly 76. I.) — For juniors; seniors may elect. Textbook and lectures.

3 class hours.

Credit, 3.

Professor OSTRANDER.

75. **I. HYDRAULICS AND WATER SUPPLY.** — For seniors. Textbook and lectures.

3 class hours.

Credit, 3.

Professor OSTRANDER.

76. **II. SEWERS AND SANITARY ENGINEERING.** — For seniors. Textbook and lectures.

3 class hours.

Credit, 3.

Professor OSTRANDER.

Prerequisite, Mathematics 75.

91. **I. 92. II. DIFFERENTIAL AND EMPIRICAL EQUATIONS.** — For seniors. A course dealing with the methods of solution of the simpler forms of differential equations and their applications, especially to chemical reactions, and the determination of empirical equations from observed data. Textbook and lectures.

2 class hours.

Credit, 2.

Assistant Professor MOORE.

Prerequisite, Mathematics 51.

Physics.

Professor POWERS, Assistant Professor ALDERMAN.

The courses in this department present a basic study of the physical laws and phenomena of nature with special emphasis on the applications of the principles studied. These courses furnish satisfactory training for pre-medical

students and for prospective teachers in secondary schools. Courses 25 and 26 constitute a study in general physics. The other courses afford opportunity for more advanced and individual work.

Elective Courses.

25. **I. MECHANICS AND HEAT.** (Formerly 25. I. and 27. III.) — For sophomores; juniors and seniors may elect. This course is largely a study of the following and related topics: equilibrium of bodies; forms of energy and work; motion; fluids; surface tension; molecular phenomena; elasticity; wave-motion; thermometry; expansion; hygrometry; transmission of heat; changes of state; radiation.

2 class hours.

1 2-hour laboratory period, credit, 3.

The DEPARTMENT.

26. **II. LIGHT AND ELECTRICITY.** (Formerly 26. II. and 27. III.) — For sophomores; juniors and seniors may elect. Includes wave-theory of light; optical instruments; analysis of light; interference; polarization; magnetism; electrostatics; production and properties of electric currents; electrical appliances and machines; oscillatory circuits; vacuum tubes; and related topics.

2 class hours.

1 2-hour laboratory period, credit, 3.

The DEPARTMENT.

51. **I. 52. II. MAGNETISM, ELECTRICITY, PHOTO-ELECTRICITY, THERMIONICS, AND APPLICATIONS.** — For juniors and seniors. Course 51 deals largely with direct currents, Course 52 with alternating currents, applications of thermionics, and photo-electricity. These courses are planned to give the student a good grounding in theory and methods of measurement in the subjects indicated, which are useful in many fields of investigation. Modern methods are stressed and instruments of precision are used.

2 class hours.

1 2-hour laboratory period, credit, 3.

Professor POWERS.

Prerequisites, Physics 26 and Mathematics 28 for Course 51; Physics 51 for Course 52.

53. **I. OPTICS.** (Formerly 55. III.) — For juniors; seniors may elect. An intermediate course in the theory of light. Work in geometrical and physical optics is done. Precision instruments are used in the laboratory.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor ALDERMAN.

Prerequisite, Physics 26; Mathematics 28.

54. **II. THERMODYNAMICS.** — For juniors; seniors may elect. A study of heat exchanges and energy changes due to heat in systems of matter. The subject material and experimental methods are useful in other branches of science.

2 class hours.

1 2-hour laboratory period, credit, 3.

Assistant Professor ALDERMAN.

Prerequisite, Physics 25; Mathematics 28.

75. **I. 76. II. ADVANCED EXPERIMENTAL WORK IN SELECTED TOPICS.** — For seniors. These courses are largely experimental, and the subject matter is adapted to the needs of the individual student. The research viewpoint is emphasized.

3 2-hour laboratory periods, credit, 3.

Professor POWERS.

Prerequisites, Physics 25, 26; 51 and 52; or 53 and 54; Mathematics 28 and 51.

85. **I. 86. II. MODERN PHYSICS.** — For seniors. Typical subjects studied are theories of the atom, radiation, quantum theory, spectra, X-ray analysis, etc.

3 class hours.

Credit, 3.

Professor POWERS.

Prerequisites, Physics 25, 26, 51, 53, 54, or equivalent; Mathematics 28 and 51.

Veterinary Science.

Professor LENTZ.

The courses in veterinary science are arranged to meet the needs of students who expect to follow practical agriculture; of prospective students of veterinary and human medicine; and of teachers and workers in the biological sciences.

Elective Courses.

51. **I. VETERINARY HYGIENE.** (Formerly 50. II.) — For juniors; seniors may elect. Students are acquainted with the influences which air, water, feed, disposal of animal waste material, etc., may have upon the health of animals, and upon the health of those who use both animals and animal products.
3 class hours.

Credit, 3.

Professor LENTZ.

75. **I. COMPARATIVE VETERINARY ANATOMY.** — For seniors; juniors may elect. The structure of the horse is studied and the structures of other farm animals are compared with it. This is a lecture and demonstrational course.
3 class hours.

Credit, 3.

Professor LENTZ.

76. **II. GENERAL VETERINARY PATHOLOGY.** (Formerly 76. II. and 77. III.) — For seniors; juniors may elect. A study of fundamental, general pathological conditions; inflammation, fever, etc., and application of principles to etiology, pathogenesis, and prophylaxis of communicable and non-communicable diseases of domesticated animals.
3 class hours.

Credit, 3.

Professor LENTZ.

88. **II. AVIAN PATHOLOGY.** (Formerly 89. I.) — For seniors. Consists of lectures devoted to principles of pathology, with specific application to avian diseases. Etiology, pathogenesis, and prophylaxis will be emphasized.
3 class hours.

Credit, 3.

Professor LENTZ.

Prerequisites, Bacteriology 31 and 52; Physiology 75 and 76.

DIVISION OF SOCIAL SCIENCES.

Professor MACKIMMIE.

Agricultural Economics.

Professor CANCE, Professor LINDSEY, Assistant Professor JEFFERSON, Mr. SMART, Miss FOLEY.

Instruction in agricultural economics is designed to show that the agricultural industry justifies its existence chiefly as a supplier of food and raw textile materials for human consumption; that agricultural success is measured by production of values as well as by production of volume of agricultural products; that the goal of the farmer is the largest net profit over a long-time period; that agricultural production includes all processes from purchase of seed and fertilizer and preparation of seedbed until the product reaches the consumer, including collection, transportation, storage, financing, packing, handling, and selling; that a knowledge of the business of agriculture and agricultural commerce is today more necessary than a knowledge of agricultural technique. The work of this department is conducted by means of lectures, readings, and research in both library and field.

Elective Courses.

26. **II. ECONOMIC GEOGRAPHY.** — For sophomores. The purpose of this course is to present to the student, the geographic distribution of natural and human resources, the physiographic bases of the agricultural, manufacturing, and allied industries, their economic characteristics, and the physical and social reasons for their geographic location.
3 class hours.

Credit, 3.

Miss FOLEY.

51. I. THE ECONOMICS OF PRODUCTION. (Formerly 50. I. and 51. II.) — For juniors; seniors may elect. A presentation of the industrial relationships and the principles upon which the production of economic goods is based. The choice and use of land, equipment, and labor in agriculture and the manufacture of derivative products and the significant related cost and production problems are considered.

3 class hours.

Credit, 3.

Professor CANCE.

52. II. THE FUNDAMENTALS OF COOPERATION. — For juniors; seniors may elect. The history, principles, and business relations of agricultural co-operation. (1) A survey of the development, methods, and economic results of farmers' organizations and great cooperative movements; (2) the business organization of agriculture abroad, and the present aspects and tendencies in the United States; (3) the principles underlying successful cooperative endeavor among farmers, and practical working plans for cooperative associations, with particular reference to purchase of supplies and the marketing of perishable products. Lectures, text, assigned readings, and practical exercises.

3 class hours.

Credit, 3.

Professor CANCE.

53. I. MARKETING AND MARKETING PROBLEMS. — For juniors; seniors and graduate students may elect. A study of the forces and conditions which determine prices and the mechanism, methods, and problems concerned with transporting, storing, and distributing farm products and related goods. Supply and demand, course of prices, terminal facilities, the middleman system, speculation in agricultural products, protective legislation, the retail market, and direct sales are taken up. The characteristics and possibilities of the New England market are given special attention. Lectures, readings, assigned studies, and field work. Class trip to Boston or Springfield for market inspection, at an estimated expense of five to ten dollars.

3 class hours.

Credit, 3.

Professor CANCE.

55. I. ECONOMICS OF CONSUMPTION. (Formerly 54. I.) — For juniors; seniors and graduate students may elect. The purpose of this course is a consideration of the importance of consumption in modern industry and commerce. It includes a study of the laws of consumption, standards of living, sources and factors determining family incomes, and of the administration of these incomes as shown by the expenditures of the nation and of various groups. The relation of consumption to the problems of population and to the development of society is also studied. Lectures, assigned readings, and class discussions.

3 class hours.

Credit, 3.

Miss FOLEY.

56. II. ADVERTISING AND SALESMANSHIP. (Formerly 83. I. and 84. II.) — For juniors; seniors may elect. This course is a practical study of the technique of present-day market distribution of agricultural and other products. Emphasis is placed on the functions of advertising, and upon the steps involved in the preparation of the finished advertisement. The principles and problems of selling goods and services are analyzed and discussed and the assistance of advertising to the salesman is stressed.

3 class hours.

Credit, 3.

Miss FOLEY.

75. I. CURRENT ECONOMIC PROBLEMS. (Formerly 77. I.) — For seniors and graduate students; juniors may elect. An advanced course for those desirous of studying more intensively some current economic problems. Studies in economic philosophy and the economic aspects and consequences of progress in the physical and biological sciences, current economic questions, agricultural legislation, and government aids and subsidies are some of the problems discussed. Particular attention will be given to economic problems relating to New England. Students will be encouraged to pursue lines of individual interest.

3 class hours.

Credit, 3.

Professor CANCE.

76. **II. PRINCIPLES OF TRANSPORTATION.**—For seniors and graduate students; juniors may elect. The development of highway, waterway, and railway transportation, and its relation to the agricultural and industrial development of the country; the principles governing the operation and control of transportation agencies; present-day problems relating to the shipment of farm products, rates, facilities, and services; methods of reducing wastes in transportation; the economics of the good roads movement and of motor transportation. Lectures, text, and field work.
3 class hours.

Credit, 3.
Professor CANCE.

77. **I. ECONOMICS OF FOREIGN TRADE.** (Formerly 87. III.)—For seniors; juniors and graduate students may elect. A study of the principles and practices of international trade, including a survey of historical trends of the foreign trade of the United States, particularly with reference to agricultural products; the business methods of foreign traders; foreign exchange; and the efforts made by governments and business groups to influence foreign trade. Textbook, lectures, class discussions, and class trip to Boston at an estimated expense of twelve to fifteen dollars.
3 class hours.

Credit, 3.
Miss FOLEY.

78. **II. MONEY, BANKING, AND AGRICULTURAL CREDIT.**—For seniors; juniors and graduate students may elect. The development of the monetary and banking systems of the United States; the operation of various types of financial institutions; the use of credit in economic production and the development, organization, and operation of agricultural and industrial credit institutions.
3 class hours.

Credit, 3.
The DEPARTMENT.

79. **I. PRINCIPLES AND METHODS OF STATISTICS.**—For seniors and graduate students; juniors may elect. Methods of collecting, analyzing, interpreting, and presenting statistical information. The application of statistical methods to the fields of agriculture, economics, education, business, and industry is emphasized through practical laboratory problems.
1 class hour:

2 2-hour laboratory periods, credit, 3
Professor LINDSEY.

80. **II. ADVANCED STATISTICS.** (Formerly 85. II. and 86. III.)—For seniors and graduate students. This course deals with the use of statistics in the analysis of economic data with special emphasis upon prices; the use of multiple correlation methods in the study and analysis of prices of agricultural and certain other commodities.
1 class hour.

2 2-hour laboratory periods, credit, 3
Professor LINDSEY.

81. **I. ELEMENTARY BUSINESS ACCOUNTING.** (Formerly 88. III.)—For seniors; juniors may elect. This course aims to give the student an elementary working knowledge of the principles underlying the accounting system in the gathering, analysis, and interpretation of accounting data, and the method used in accounting and preparing the usual types of business statements for individual proprietorship businesses and partnerships. The managerial uses of accounting as a means of business control are the keynote of the course.
1 class hour.

2 2-hour laboratory periods, credit, 3
Professor LINDSEY.

82. **II. ADVANCED BUSINESS ACCOUNTING.**—For seniors. This course covers the problems of corporation accounting and accounting for cooperative organizations. Considerable time is spent on problems in amortization, depreciation, and the preparation, analysis, and interpretation of financial statements.
1 class hour.

2 2-hour laboratory periods, credit, 3
Professor LINDSEY.

84. **II. RURAL AND BUSINESS LAW.** (Formerly 75. II.) — For seniors; juniors may elect. Land, titles, public roads, rights incident to ownership of live stock, contracts, commercial paper, and distinctions between personal and real property. Text, written exercises, lectures, and class discussions.
3 class hours.

Credit, 3.
Mr. SMART.

91. **I. 92. II. SEMINAR.** (Formerly 80. I. 81. II. 82. III.) — For seniors and graduate students. Research in agricultural economics and history; problems of New England agriculture. Library work and reports. If desirable some other topic may be substituted.

1 or 2 2-hour conference periods, credit, 1 to 3.
The DEPARTMENT.

Education.

Professor WELLES, Professor GLICK, Professor DESILVA, Mr. HEALD,¹ Mr. CARPENTER.

The primary aim of the department is to be of maximum service to the students who desire to engage in some form of educational work and whose ability, personality, and attitude indicate that they are fit candidates. Many of the courses are elected because of their cultural values, also. Those students who have completed properly selected groups of courses may be recommended to the State Department of Education to receive a teacher's certificate. This applies to the general field of teaching in the high schools and to the special field in Vocational Agriculture and related subjects. Students desiring state approval as teachers of Vocational Agriculture or related subjects should confer with the head of the department as early as possible to insure a desirable range of preparation, including farm experience, a part of which may be gained after entering college. They should also become acquainted with the State Supervisor for Agricultural Teacher-Training, who approves candidates for positions in special schools and departments of agriculture in high schools. A teacher-training certificate will be awarded by the Division of Vocational Education to students who qualify as to farm experience, technical subjects, and educational courses as advised (regularly courses 65, 71, 78, and 81).

EDUCATION.

Elective Courses.

65. **I. PRINCIPLES AND METHODS OF TEACHING.** (Formerly 51. I. and II.) — For juniors; seniors may elect. The course is intended for those students who expect to become teachers. Others must have the consent of the instructor before registering. Case studies are used to illustrate methods and classroom management. Current educational literature relating to methods of teaching, and certain books and problems are assigned for reading and report. Some attention by groups is given to the problems of teaching specific subjects of the high school curriculum during the last weeks of the semester. A basis text is used. By preference Course 51 should precede this. Advised for candidates for the State Vocational Teacher-Training Certificate.
3 class hours.

Credit, 3.
Professor WELLES.

68. **II. HISTORY OF EDUCATION.** — For juniors and seniors. The growth of education is traced in its development from the earliest efforts in education to the present complex form. Historic influences upon educational ideals, studies, and modes of teaching will be reviewed as cause and background for advancement. A basic text and other references will be used.
3 class hours.

Credit, 3.
Professor WELLES.

71. **I. VOCATIONAL EDUCATION IN AGRICULTURE.** (Formerly 76. I. and II.) — For juniors; seniors and graduate students may elect with permission of the head of the department. The course demands certain prerequisites of experi-

¹ State Agent for Agricultural Teacher-Training representing the State Department of Education in the administration of vocational education acts.

ence and objective which make permission necessary. It is the first of the series (71, 78, 81) and gives a survey of vocational education and an introduction to the work of teaching agriculture in secondary schools, with essential information and observation preparatory to the apprenticeship course. Required of candidates for the agricultural teacher-training certificate.

Credit, 3.

Professor WELLES and VOCATIONAL DIVISION
OF STATE DEPARTMENT OF EDUCATION.

76. **II. METHODS IN EXTENSION TEACHING.** (Formerly 77. **III.**) — For seniors; juniors and others qualified may elect. Admission after consultation with the instructor in charge. The course deals with various phases of extension work and the methods by which this work is accomplished. The specific lines are those of the state director, state leaders, agricultural and home economics specialists, and county agricultural, home demonstration, and 4-H club agents. The different phases of the work will be discussed by members of the extension staff who are specialists in their particular lines. Special reports and several visits to county extension meetings are required. The course will be offered by the Extension Service.

Credit, 2

Professor WELLES and Mr. CARPENTER.

78. **I. and II. APPRENTICE TEACHING.** — For juniors or seniors qualified. Arrangement with the head of the department is required. Under certain conditions a student may be absent from college a semester for practice teaching. This is an opportunity to teach a regular schedule, for the most part, and usually there is the understanding that the relation to the school is that of an assistant teacher. This is part of the required preparation leading to the state certificate for teachers of agriculture.

Credit, 4

Professor WELLES and VOCATIONAL DIVISION
OF STATE DEPARTMENT OF EDUCATION.

80. **I. and II. SUPERVISED TEACHING.** — For seniors; qualified juniors may be admitted. No student will be enrolled for the course except by arrangement with the head of the department. Some opportunities for practice are available. A limited amount of study of teaching by observing is permitted. Special professional reading, assigned and optional, is required. A conference is required each week for reporting on the work each is doing and for general discussion. The amount of credit depends upon the amount and character of the work. A thesis covering all work in the course during the semester is required.

1 class hour.

2 to 4 laboratory hours, credit, 1-

Professor WELLES.

81. **I. TECHNIQUE OF TEACHING AGRICULTURE.** (Formerly 82. **II.**) — For seniors and others qualified, by arrangement with the head of the department. By preference this course follows Courses 71 and 78. It covers the material, methods, policies, and special requirements of the state for teaching agriculture and related subjects in vocational schools. Required of candidates for the agricultural teacher-training certificate.

2 class hours.

Credit,

Professor WELLES and VOCATIONAL DIVISION
OF STATE DEPARTMENT OF EDUCATION.

84. **II. SECONDARY EDUCATION.** (Formerly 75. **III.**) — For seniors; juniors may elect. The course has two main objectives: (1) To give a perspective of the high school as to its aims, relations, organization, and functions; (2) To present in some detail the agencies and operations that carry these out through the curricula, schedules, and extra-curricular activities. A basic text is used with supplementary reading and problem assignments.

3 class hours.

Credit,

Professor WELLES

PSYCHOLOGY.

Elective Courses.

51. **I. INTRODUCTORY PSYCHOLOGY.** (Formerly 55. I. and II.) — For juniors and seniors. This is an introductory course for those anticipating further study in psychology, physiology, sociology, etc., as well as a practical and cultural course for those who can take only one course in this field. It deals with the fundamental principles of psychology and their application to the understanding and control of human thought and action.
3 class hours.

Credit, 3.
Professor DESILVA.

52. **II. EXPERIMENTAL PSYCHOLOGY.** (Formerly 65. III.) — For juniors; seniors may elect. The course is designed to acquaint students with typical problems and techniques of research in psychology. Each student will be allowed to spend a certain amount of time on an independent problem in addition to demonstrations, assigned readings, and class experiments.
1 class hour.

2 2-hour laboratory periods, credit, 3.
Professor DESILVA.

54. **II. EDUCATIONAL PSYCHOLOGY.** (Formerly 56. II. and III.) — For juniors; seniors may elect. An application of psychology to the field of education. The course deals with the original nature of the child, the psychology of learning, individual differences, transfer of training, mental tests, etc.
3 class hours.

Credit, 3.
Professor GLICK.

Prerequisite, Psychology 51 or the consent of the instructor.

85. **I. ABNORMAL PSYCHOLOGY.** — For seniors; juniors may elect. A study of abnormal behavior patterns and diseased personalities with a view to a better understanding and control of oneself.
3 class hours.

Credit, 3.
Professor DESILVA.

Prerequisite, Psychology 51 or the consent of the instructor.

86. **II. APPLIED PSYCHOLOGY.** (Formerly 85. I.) — For seniors; juniors may elect. The applications of psychology to mental hygiene, medicine, law, business, politics, and other professions and industrial fields.
3 class hours.

Credit, 3.
Professor DESILVA.

Prerequisite, Psychology 51 or the consent of the instructor.

89. **I. TESTS AND MEASUREMENTS.** (Formerly 79. III.) — For seniors; juniors may elect. A study of the history, nature, construction, and administration of the various types of mental tests. An attempt is made to criticize and evaluate the various usages of tests. Some attention is paid to statistical interpretations of data.
3 class hours.

Credit, 3.
Professor GLICK.

Prerequisite, Psychology 51 or 54 or consent of the instructor.

90. **II. CONTEMPORARY PSYCHOLOGIES.** — A survey of the history of psychology with special emphasis upon the analysis and evaluation of current psychological theories and schools.
2 class hours.

Credit, 2.
Professor DESILVA.

PHILOSOPHY.

Elective Courses.

61. **I. HISTORY OF PHILOSOPHY.** (Formerly 52. I.) — For juniors; seniors may elect. A study of the development of western thought in general from the time of the early Greeks to the recent past. This course attempts to provide

a background for the evaluation and understanding of present theories in education, religion, ethics, metaphysics, etc.

3 class hours.

Credit, 3.

Professor GLICK.

62. II. TYPES OF CONTEMPORARY PHILOSOPHY. (Formerly 95. III.) — For juniors; seniors may elect. A study of current types of philosophy including naturalism, idealism, scepticism, mysticism, and pragmatism. An attempt is made to evaluate and criticize the various types of philosophy in the light of modern knowledge and historical perspective.

3 class hours.

Credit, 3.

Professor GLICK.

Economics, History, and Sociology.

Professor MACKIMMIE, Assistant Professor CUTLER, Assistant Professor JEFFERSON, Mr. WILLIAMS.

The courses in economics, history, and sociology are planned with the purpose of giving the student that knowledge and understanding of the important factors and problems in this field of study and life which every active citizen and educated man ought to have. In addition they enable a student to specialize in history and sociology and related science, or in social work.

ECONOMICS.

Required Course.

25. I. ECONOMIC PRINCIPLES. — For sophomores. Definitions of economic terms, such as wealth, capital, value, etc.; factors of production, exchange, and consumption; principles of economic production, supply and demand, diminishing returns, division of labor, productive organization; principles of exchange, theories of value, money and its problems; international trade, tariff and free trade theories; forms of income, wages, interest, rent, profits, and the forces which govern them; principles of spending, economy, luxury; principles and agencies for saving, investments, banks, building associations, insurance. Textbook and readings.

3 class hours.

Credit, 3.

Professor MACKIMMIE.

Elective Courses.

51. I. BUSINESS AND INDUSTRY. — For juniors and seniors. The forms, organization, administration, and labor problems of business. Methods of organizing, financing, and administering corporations and partnerships; forms of business administration, wholesaling, jobbing, retailing, advertising, credits and collections; system of industrial remuneration for wage earners, cooperation and preserving industrial peace; problems concerned with protective legislation for workmen and employers, sweated industries, prison labor, child labor, and industrial education.

3 class hours.

Credit, 3.

Professor MACKIMMIE.

52. II. PUBLIC FINANCE. — For juniors and seniors. Principles of public revenues and expenditures with special emphasis on the systems and problems of taxation.

3 class hours.

Credit, 3.

Professor MACKIMMIE.

HISTORY.

Required Course.

30. II. AMERICAN HISTORY. — For sophomores. The rise and development of the United States, with special stress upon the origin of present conditions. Lectures and readings.

3 class hours.

Credit, 3.

Assistant Professor CUTLER.

Elective Courses.

25. **I. AMERICAN GOVERNMENT.**—For sophomores; others admitted by permission of instructor. A study of the structure and operation of the machinery of our government; also a study of the history of its development from its inception to the present day.
3 class hours.

Credit, 3.

Assistant Professor CUTLER.

28. **II. ECONOMIC HISTORY OF THE UNITED STATES.**—For sophomores; juniors and seniors may elect. A study of the factors and forces which have affected the economic development of the United States. Special attention is focused on the working out of economic principles, and on the interaction between the economic, social, and political conditions and institutions. Text, lectures, and prepared discussions.
3 class hours.

Credit, 3.

Assistant Professor JEFFERSON.

32. **II. ENGLISH HISTORY.** (Formerly 29. II.)—For sophomores; juniors and seniors may elect. A study of the political, social, and religious movements in England, with special reference to an understanding of English literature.
3 class hours.

Credit, 3.

Professor MACKIMMIE.

51. **I. GOVERNMENT.** (Formerly 50. I.)—For juniors and seniors. Forms and working methods of the governments of Great Britain, Germany, France, Russia, Switzerland, New Zealand, and Canada; historic types and theories of government; forms and methods of Federal, State, and local governments in America; progress and problems of democracy, and new reform movements in organization and administration; new tendencies towards social legislation and extension of governmental control.
3 class hours.

Credit, 3.

Professor MACKIMMIE.

52. **II. MODERN EUROPEAN HISTORY (1933-34).** (Formerly 51. II.)—Alternates with Course 54. For juniors and seniors. The political and social history of the principal countries of Europe from 1500 to 1830.
3 class hours.

Credit, 3.

Professor MACKIMMIE.

53. **I. THE LITERATURE OF THE BIBLE.** (Formerly 54. I.)—For juniors and seniors. An introduction to the literature and teachings of the Old and New Testaments.
2 class hours.

Credit, 2.

Mr. WILLIAMS.

54. **II. EUROPEAN HISTORY SINCE 1830 (1934-35).** (Formerly 52. III.)—Alternates with Course 52. For juniors and seniors. The rise of nationalism and imperialism; the unification of Italy and of Germany; the Third French Republic; European expansion; the Russo-Japanese War; the World War. While this course is a continuation of Course 52, it is complete in itself and may be elected by those who have had no history training. Its aim is to provide a basis for an understanding of present-day conditions.
3 class hours.

Credit, 3.

Professor MACKIMMIE.

56. **II. THE PROBLEMS OF RELIGION.**—For juniors; seniors may elect. Admission by permission of instructor. The field of this course is that of the philosophy of religion. However, no attempt will be made to cover all the problems of this discipline. Only those problems will be considered which the students electing the course desire to have considered. Any current religious problem will be considered within the scope of the course. The method pursued will be that of the seminar.
2 class hours.

Credit, 2.

Mr. WILLIAMS.

58. II. THE HISTORY OF RELIGIONS. (Formerly 55. II.) — For juniors and seniors. Primitive religions: Hinduism, Buddhism, Mohammedanism, and Christianity. Consideration will be given to the application of the material of the course to current religious problems.
2 class hours.

Credit, 2.
Mr. WILLIAMS.

SOCIOLOGY.

Elective Courses.

27. I. ELEMENTS OF SOCIOLOGY. — For sophomores; others admitted by permission of instructor. A study of the individual considered as a member of his various groups; the group fallacy; the conditioned reflex; emotion; personality; social behavior; social stimulation; the group and the crowd; social attitudes, ideals, and adjustments; influence of environment; rural life; field and viewpoint of scientific sociology. Lectures and readings.
3 class hours.

Credit, 3.
Assistant Professor CUTLER.

51. I. 52. II. SOCIOLOGICAL LAWS AND THEIR APPLICATION. — For juniors; seniors may elect. A study of the scientific principles which characterize the relation of the individual to his various groups — the family, the school, the club, recreational institutions, the church, business, the government, and others. Practical application. This study is partly directed toward rural phases of the subject. Lectures, readings, field work, discussions, and topical reports. These courses are sequential, but may be elected independently.
3 class hours.

Credit, 3.
Assistant Professor CUTLER.

Prerequisite, Sociology 27, or the consent of the instructor.

54. II. HISTORICAL SOCIOLOGY. — For juniors; seniors may elect. Characteristics of primitive man, departure from the animal status and beginnings of civilization; origin and development of industries, arts, and sciences, including agriculture, of languages, warfare, migrations, and social institutions; a study of the powerful natural and human forces that have brought man from the early stages to modern development; characteristic features of the leading civilizations and races of ancient and modern times; beneficial and dangerous factors in American life.
5 class hours.

Credit, 5.
Assistant Professor CUTLER.

Prerequisite, Sociology 27, or the consent of the instructor.

75. I. PROBLEMS OF SOCIAL REFORM. — For seniors; juniors by permission. Such current problems as eugenics, race suicide, divorce, crime and delinquency, classes, prison reform, prevention and treatment of dependents and defectives, poverty, its causes and preventions; constructive modern social reform movements for insurance of wage earners, farm relief, protection of childhood, assurance of safety, health, and play time for all classes. The correctional and charitable institutions of Massachusetts are studied in considerable detail.
5 class hours.

Credit, 5.
Assistant Professor CUTLER.

Prerequisite, Sociology 27, or the consent of the instructor.

77. I. FIELD WORK IN SOCIOLOGY. (Formerly 76. I.) — For seniors; juniors may elect. Designed to meet the needs of students who wish to do some constructive work in social service while still in college. Any project for which credit in this course is to be asked must first have the approval of the head of the department.

2 to 6 laboratory hours, credit, 1 to 3.
Assistant Professor CUTLER.

Prerequisite, Sociology 27, or the consent of the instructor.

78. **II. SOCIOLOGICAL RESEARCH.** (Formerly 77. III.) — For seniors; juniors may elect. Research methods — measurements, exploration, criticism, surveys; a careful study of the scientific method as applied to social problems; the technique of investigation and research; the procedure of gathering sociological data by means of the survey; the interpretation and graphic presentation of social facts. Text, lectures, field and laboratory work.

Credit, 3.

Assistant Professor CUTLER.

Prerequisite, Sociology 27, or the consent of the instructor.

79. **I. 80. II. SEMINAR.** — Enrolment is open to graduate students, and seniors majoring in social science who are especially prepared. Topics recently studied are: modern economic theory; civilization as reflected in great literature; sociology of American colonies in the Caribbean region; success in community leadership; sociology of the Old World and Far East; the standard of living in American life; proposed improvements in local government; international social problems; the art of straight thinking; Utopias. Courses are sequential but may be elected independently.

Credit, 2.

Professors MACKIMMIE and CUTLER.

84. **II. CONSERVATION OF THE FAMILY (1933-34).** (Formerly 83. II.) — For seniors; juniors may elect. A study of some of the modern problems in family life which can be traced to ancient lineage; ways in which an individual and society can help to conserve the family; some hindrances to normal family life; the contribution of the successful family toward community and world progress. Given in alternate years.

Credit, 3.

Professor SKINNER.

Languages and Literatures.

Professor PATTERSON, Professor JULIAN, Associate Professor PRINCE, Associate Professor RAND, Assistant Professor GODING, Assistant Professor FRAKER, Mr. BARNARD, Mr. ELLERT, Mr. TROY, Miss BEAMAN.

The courses in English are intended to enable students to express themselves effectively and to appreciate the ideals of English-speaking people throughout their history.

The aim of the courses in French, Spanish, and German is to give the student a practical knowledge of these languages for the purpose of wider reading and research, to introduce him to some of their treasures in art and science, and through the literature to acquaint him with the people.

The courses in History and Interpretation of Music are non-technical in treatment and are intended for those who wish a background of the history of music and its interpretation.

ENGLISH.

Required Courses.

1. **I. 2. II. ENGLISH.** — For freshmen. Composition. Intended to teach straight thinking, sound structure, clear and correct expression. Lectures, recitations, theme writing, and conferences.

3 class hours.

Credit, 3.

Associate Professors PRINCE and RAND, Mr. BARNARD, Mr. TROY, and Miss BEAMAN.

25. **I. 26. II. ENGLISH.** — For sophomores. A general reading course in English literature.

2 class hours.

Credit, 2.

Professor PATTERSON.

29. **I. 30. II. ENGLISH.** — For sophomores. Public speaking.

1 class hour.

Credit, 1.

Associate Professors PRINCE and RAND, Mr. BARNARD, and Mr. TROY.

Elective Courses.

50. **II. ENGLISH POETRY AND THE ROMANTIC MOVEMENT (1933-34).**— Alternates with Course 56. For juniors and seniors. A study chiefly in the beginning of Romanticism in English Poetry as found in the work of Collins, Gray, Burns, and Blake, with considerable attention to the culmination of Romanticism in the poetry of Shelley.

3 class hours.

Credit, 3.

Associate Professor PRINCE.

52. **II. ENGLISH WRITERS FROM MILTON TO POPE.**— For juniors and seniors. Some of the writers studied are Milton, Dryden, and Pope.

3 class hours.

Credit, 3.

Professor PATTERSON.

53. **I. ENGLISH PROSE OF THE EIGHTEENTH CENTURY (1933-34).**— Alternates with Course 61. For juniors and seniors. A brief exposition of the thinking of the period, in philosophy, government, and criticism is followed by a study of essayists and letter writers from Defoe to Godwin.

3 class hours.

Credit, 3.

Associate Professor PRINCE.

54. **II. ENGLISH PROSE IN THE NINETEENTH CENTURY.**— For juniors and seniors. Coleridge, Lamb, DeQuincey, Hazlitt, Macaulay, Carlyle, Ruskin, Newman, Arnold, Pater, Stevenson.

3 class hours.

Credit, 3.

Mr. BARNARD.

56. **II. AMERICAN LITERATURE (1934-35).** (Formerly 55. II and 56. III.) — Alternates with Course 50. For juniors and seniors. A course in the chief American writers, among those studied being Franklin, Brockden Brown, Irving, Cooper, Melville, Hawthorne, Emerson, Thoreau, Parkman, Freneau, Bryant, Poe, Longfellow, Whittier, Lowell, Whitman, Lanier.

3 class hours.

Credit, 3.

Associate Professor PRINCE.

58. **II. ENGLISH POETRY OF THE NINETEENTH CENTURY.** (Formerly 51. II. and 57. III.) — For juniors and seniors. Especial attention is given to Tennyson, Browning, and Swinburne.

3 class hours.

Credit, 3.

Professor PATTERSON.

59. **I. BYRON AND KEATS (1933-34).** (Formerly 60. I.) — Alternates with Course 75. For juniors and seniors.

3 class hours.

Credit, 3.

Professor PATTERSON.

61. **I. CHAUCER (1934-35).**— Alternates with Course 53. For juniors and seniors. Reading of the principal works of Chaucer; a study of Chaucer's development as a creative artist; an attempt to appreciate his humanism.

3 class hours.

Credit, 3.

Associate Professor PRINCE.

62. **II. SHAKESPEARE.** (Formerly 63. III.) — For juniors and seniors. Three or four representative plays will be studied as closely as possible.

3 class hours.

Credit, 3.

Professor PATTERSON.

64. **II. THE LAKE POETS (1934-35).**— Alternates with Course 68. For juniors and seniors. A study of the background, the theories and the poetry of the Lake Poets, the leaders of whom were Wordsworth and Coleridge.

3 class hours.

Credit, 3.

Associate Professor RAND.

65. **I. CREATIVE WRITING (1934-35).**—Alternates with Course 67. For juniors and seniors. Advanced work in writing, based upon specimens by contemporary authors and upon the personal experience of the student. Particular attention is given to certain elements of style.
3 class hours.

Credit, 3.
Associate Professor RAND.

67. **I. LIBRARY RESEARCH (1933-34).** (Formerly 66. II.) — Alternates with Course 65. For juniors and seniors. Each student makes a considerable investigation of a subject of his own selection. An orderly accumulation of material is followed by an intelligent and readable interpretation of its significance.
3 class hours.

Credit, 3.
Associate Professor RAND.

68. **II. THE TUDOR POETS (1933-34).**—Alternates with Course 64. For juniors and seniors. A study of the non-dramatic poetry of the Tudor period, culminating in the work of Spenser, the Elizabethan lyrists, and the King James translators of the Bible.
3 class hours.

Credit, 3.
Associate Professor RAND.

71. **I. ELIZABETHAN DRAMATISTS.**—For juniors and seniors. A study of the types of Elizabethan drama, exclusive of Shakespeare, with special consideration of the plays of such men as Lyly, Peele, Greene, Kyd, Marlowe, Jonson, Beaumont, Fletcher, Webster, Massinger.
3 class hours.

Credit, 3.
Associate Professor PRINCE.

75. **I. THE NOVEL (1934-35).**—Alternates with Course 59. For juniors and seniors. A rapid survey of the beginnings of the novel will be followed by a somewhat careful study of its types and development as revealed in such works as Tom Jones, Vicar of Wakefield, Pride and Prejudice, Ivanhoe, David Copperfield, Vanity Fair, Adam Bede, Kidnapped, Tess of the D'Urbervilles, Esther Waters, Rise of Silas Lapham, House of Mirth, Main Street.
3 class hours.

Credit, 3.
Professor PATTERSON.

79. **I. SHAKESPEARE.**—For juniors and seniors. This course is based upon the careful reading of about twenty of Shakespeare's plays, selected to indicate the evolution of the dramatist and to emphasize the various phases of his art.
3 class hours.

Credit, 3.
Associate Professor RAND.

80. **II. MODERN DRAMA (1934-35).**—Alternates with Course 82. For juniors and seniors. This course will trace the development of English drama from the time of Ibsen to the present day. The purpose of the course is to impart an intelligent and sympathetic interest in the theatre of the twentieth century.
3 class hours.

Credit, 3.
Associate Professor RAND.

82. **II. MODERN POETRY (1933-34).** (Formerly 81. III.) — Alternates with Course 80. For juniors and seniors. This course attempts to trace the spirit of Twentieth Century poetry from such authors as Hardy, Whitman, and Emily Dickinson to those of the present day. About fifteen Twentieth Century poets are studied in this course, particular attention being given to the influence of Whitman and Emily Dickinson. The student is required to memorize a number of lyrics.
3 class hours.

Credit, 3.
Associate Professor RAND.

PUBLIC SPEAKING.

Elective Courses.

50. **II.** ARGUMENTATION AND ORATORY. (Formerly 50. I. and 51. III.) — For juniors and seniors. Presents the fundamental principles of argumentation with the principles and the practice of formal oratory; the preparation and delivery of one original oration; prescribed reading in oratory. The course is recommended for those who desire to enter the Intercollegiate debates and the Flint Contest.

3 class hours.

Credit, 3.

Associate Professor PRINCE.

FRENCH.

Elective Courses.

1. **I.** 2. **II.** ELEMENTARY FRENCH. — For freshmen; sophomores, juniors, and seniors may elect. The essentials of grammar are rapidly taught and will be accompanied by as much reading as possible.

3 class hours.

Credit, 3.

Assistant Professor GODING.

5. **I.** 6. **II.** INTERMEDIATE FRENCH. — For freshmen and sophomores; juniors and seniors may elect. Training for rapid reading. The reading of a number of short stories, novels, and plays; readings from periodicals and scientific texts in the library.

3 class hours.

Credit, 3.

Assistant Professor FRAKER.

Prerequisites, French 1 and 2.

27. **I.** 28. **II.** ADVANCED FRENCH. — For sophomores; juniors and seniors may elect. A general survey of the history of French literature and the development of French culture, with representative works of the important periods. Lectures. Outside readings.

3 class hours.

Credit, 3.

Assistant Professor GODING.

Prerequisites, French 5 and 6.

51. **I.** FRENCH LITERATURE. (Formerly 50. I.) — For juniors and seniors. A detailed study of the Romantic period. Readings from Hugo, de Vigny, Lamartine, de Musset, and others. Influence of English, German, and Italian literature is stressed. Lectures and outside readings.

3 class hours.

Credit, 3.

Assistant Professor GODING.

Prerequisites, French 5 and 6.

52. **II.** FRENCH LITERATURE. (Formerly 51. II.) — For juniors and seniors. A detailed study of the Realistic period and the modern writers. Readings from Balzac, Flaubert, Stendahl, Loti, Daudet, Anatole France, and others. Lectures and outside reading.

3 class hours.

Credit, 3.

Assistant Professor GODING.

Prerequisites, French 5 and 6.

75. **I.** 76. **II.** FRENCH LITERATURE. — For seniors; juniors may elect. Survey of the Classical period, with readings from representative works.

3 class hours.

Credit, 3.

Assistant Professor FRAKER.

Prerequisites, French 5 and 6.

80. **II.** METHODS OF TEACHING FRENCH (1933-34). (Formerly 81. III.) — For seniors; juniors may elect with the consent of the instructor. This course is designed to meet the needs of students intending to teach French and those desiring a more accurate knowledge of the French language. The elements

of pronunciation will be studied scientifically and from the standpoint of the teacher. There will be a rapid but thorough review of grammar which will be followed by a discussion on textbooks and reading materials. Given in alternate years.
class hour.

Credit, 1.
Assistant Professor GODING.

SPANISH.

Elective Courses.

51. I. 52. II. ELEMENTARY SPANISH.—For juniors and seniors; open to other students upon arrangement. Grammar, exercises in composition and conversation, reading of selected short stories.
class hours.

Credit, 3.
Assistant Professor FRAKER.

75. I. 76. II. MODERN SPANISH AUTHORS.—For seniors. Reading from modern Spanish novel and drama; composition; outside reading.
class hours.

Credit, 3.
Assistant Professor FRAKER.

Prerequisite, Spanish 52.

GERMAN.

Elective Courses.

1. I. 2. II. ELEMENTARY GERMAN.—For freshmen; sophomores, juniors, and seniors may elect. Grammar, reading, and prose composition. Special emphasis is placed on the acquirement of a fundamental stem vocabulary and the ability to understand simple German paragraphs in German.
class hours.

Credit, 3.
Professor JULIAN and Mr. ELLERT.

5. I. 6. II. INTERMEDIATE GERMAN.—For freshmen; sophomores, juniors, and seniors may elect. Reading and study of some important literary productions in the field of the novel and the drama.
class hours.

Credit, 3.
Mr. ELLERT.

Prerequisites, German 1 and 2, or Entrance German.

25. I. 26. II. INTERMEDIATE GERMAN.—For sophomores; juniors and seniors may elect. The German short story; grammar review and advanced prose composition.
class hours.

Credit, 3.
Mr. ELLERT.

Prerequisites, German 1 and 2.

27. I. 28. II. ADVANCED GERMAN.—For sophomores; juniors and seniors may elect. Goethe's Faust.
class hours.

Credit, 3.
Professor JULIAN.

Prerequisites, German 5 and 6, or 25 and 26.

51. I. 52. II. SCIENTIFIC GERMAN.—For juniors and seniors. Intensive and specialized reading of literature in standard German scientific journals and reference books.
class hours.

Credit, 3.
Professor JULIAN.

Prerequisites, German 5 and 6, or 25 and 26.

75. I. 76. II. GERMAN LITERATURE.—For seniors. Advanced study of German literature and history; collateral readings, including masterpieces of different epochs, such as the *Nibelungenlied*, *Parzival*, and some typical modern drama.
class hours.

Credit, 3.
Professor JULIAN.

Prerequisites, German 27 and 28.

79. I. 80. II. CONVERSATIONAL GERMAN. — Open to advanced students in German, by permission of the instructor in charge. Practice in the oral use of German, based on reading material prepared in advance, and dealing with present-day Germany.

2 class hours.

Credit, 2

Professor JULIAN and Mr. _____

MUSIC.

Elective Courses.

51. I. HISTORY AND INTERPRETATION OF MUSIC. (Formerly 50. I.) — For juniors and seniors. The Classical School. Works of Bach, Handel, Haydn, and Mozart are performed and studied. Lectures, musical illustrations, and outside readings.

3 scheduled hours.

Credit, 2

Assistant Professor GODING.

52. II. HISTORY AND INTERPRETATION OF MUSIC. (Formerly 51. II.) — For juniors and seniors. A continuation of Course 51. The Romantic School: Beethoven, Schubert, Weber, Mendelssohn, Schumann, Chopin, Berlioz, Liszt. The Italian, French, and German schools of opera; modern and contemporary composers.

3 scheduled hours.

Credit, 2

Assistant Professor GODING.

75. I. 76. II. ENSEMBLE MUSIC. — For juniors and seniors. This course will include lectures on history of development of the orchestra and orchestra music, choral music, and band, theory and practice in harmony, arrangement and transposition of various numbers for the use of orchestra, chorus, and band. It is designed to give fundamental instruction that should be of direct value to the student for enjoyment and performance of musical compositions. All students registering for the course are expected to belong to the orchestra chorus, or band. Course 75 is prerequisite to Course 76.

3 scheduled hours.

Credit, 2

Assistant Professors GODING and CUBBON.

GENERAL DEPARTMENTS.

Military Science and Tactics.

Colonel CHARLES A. ROMEYN, Cav. (D. O. L.), U. S. A.; Captain DWIGHT HUGHES, Jr., Cav. (D. O. L.) U. S. A.; Captain HERBERT E. WATKINS, Cav. (D. O. L.), U. S. A.; Technical Sergeant JONATHAN MADDEN, U. S. A., Retired; Technical Sergeant JAMES A. WARREN, Cav. (D. E. M. L.), U. S. A. Sergeant FRANK CRONK, Cav. (D. E. M. L.), U. S. A.; and a detachment of enlisted men of the United States Army.

Under act of Congress, July 2, 1862, the College was required to provide a two-year course in military instruction under a regular army officer. All able-bodied four-year male students are required to take this course. Under act of Congress, June 3, 1916, as amended by act of Congress, September 8, 1916, there was established at this college in April, 1917, an infantry unit of the Reserve Officers' Training Corps. Following the World War and an act of Congress July 19, 1918, the Reserve Officers' Training Corps has been in operation under the regulation of the War Department, administered by the president of the college and the professor of military science and tactics. Beginning with the fall term, 1920-21, the infantry unit of the Reserve Officers' Training Corps was converted into a cavalry unit.

The primary object of the Reserve Officers' Training Corps is to provide systematic military training at civil educational institutions, for the ultimate purpose of qualifying selected students of such institutions as reserve officers in the military forces of the United States. It is intended to attain this object during the time the students are pursuing their general or professional studies, with the least practicable interference with their civil careers, by employing method designed to fit men physically, mentally, and morally for pursuits of peace as well as war.

The course for cavalry units of the Reserve Officers' Training Corps include

theoretical and practical instruction in all phases of cavalry work, so distributed over the four-year college course as to qualify students at the end of the freshman year as privates of cavalry, at the end of the sophomore year as non-commissioned officers of cavalry, and upon graduation as reserve officers. The instruction in this department covers cavalry drill, cavalry weapons — rifle, pistol, sabre, machine rifle, and machine gun — map reading and military sketching, minor tactics, equitation, etc. The course in equitation includes cross-country riding and jumping. Forty per cent of the course is classroom work. All practical instruction is out of doors.

All male candidates for a degree in the four-year course must take at least three hours a week of military training for two years. Students who are approved by the president and the professor of military science and tactics may take the advanced course in their junior and senior years if they so elect. The advanced course consists of at least five hours per week and a summer camp of about six weeks during the summer vacation between the junior and senior years. Students taking this course are paid by the Federal Government at a rate to be fixed by the Secretary of War, not to exceed the value of the army ration. The rate now fixed is thirty cents per day, which, with all allowances, amounts to about two hundred and thirty-five dollars. Students graduating in the advanced course are eligible for commissions in the Officers' Reserve Corps, but are not required to accept such commissions if offered.

The uniform furnished to the freshmen and sophomores (basic course) is a very presentable one of olive drab woolen cloth, and is supplied by the Federal Government without cost except for the necessary alterations. The uniforms for the juniors and seniors (advanced course) are similar to U. S. army officers' uniforms, tailor-made for the individual student. A deposit of thirty dollars for this uniform is required at the beginning of the junior year. The student is reimbursed through the allowances for clothing and rations.

Required Courses.

1. I. 2. II. For freshmen. Theoretical and practical instruction in courtesy and discipline, rifle marksmanship, hygiene and first aid, dismounted drill, and musketry.

3 scheduled hours, credit, 2.
ARMY INSTRUCTORS.

25. I. 26. II. For sophomores. Theoretical and practical instruction in leadership, riding, drill, sabre, machine rifle and pistol, and employment of cavalry.

3 scheduled hours, credit, 2.
ARMY INSTRUCTORS.

Elective Courses.

51. I. 52. II. For juniors. Cavalry drill and riding, selection and care of horses, pistol marksmanship, machine guns, map reading, map making, jumping, and employment of cavalry.

5 scheduled hours, credit, 3.
ARMY INSTRUCTORS.

75. I. 76. II. For seniors. Military law, history, correspondence and records, engineering (bridges and explosives), cavalry drill, leadership and command, riding, mounted sports, competitions, horse-show preparation and management, cross-country riding, and employment of cavalry.

5 scheduled hours, credit, 3.
ARMY INSTRUCTORS.

Physical Education and Hygiene.

Professor HICKS, Professor GORE, Professor RADCLIFFE, Mrs. HICKS, Assistant Professor DERBY, Assistant Professor TAUBE, Mr. BALL, Mr. BRIGGS, Mr. ROGERS.

The purpose of the laboratory courses offered by this department is to provide active exercise regularly, in order that all students may properly care for their health and maintain their physical condition throughout their college course. It

is also hoped that the health and exercise habits thus established will be continued after leaving college. The course in Hygiene is a series of lectures designed to give to the new student the simple rules of living both as an individual and in his relations with others. The required courses for men and for women are supplemented by special lectures on social hygiene and social relations. The elective courses for men are offered for those students who are preparing to teach. The majority of our graduates who enter the teaching profession in either the public or private schools are expected to do some physical education or athletic work either as coaches or administrators.

MEN.

Required Courses.

1. **I. HYGIENE.**—For freshmen. Lectures on personal hygiene, including the physiological basis for sound health habits, the importance of the systematic planning of a student's daily program in order to provide the proper amounts of time for study, with suitable periods of sleep, relaxation, recreation, and sports; posture, appropriate types of exercise, proper nutrition, social adjustment, the necessity for frequent medical, optical, and dental advice; sanitation and group health requirements.

1 class hour.

Credit, 1.

Professor RADCLIFFE.

3. **I. PHYSICAL EDUCATION ACTIVITY. RECREATION.** (Formerly 2. I.)—For freshmen. Outdoor games in the regular classwork include soccer, forward pass drive, kick football, swimming, and miscellaneous games using their respective skills; a physical achievement test consisting of track and field events is given. Men may elect freshman football or freshman cross country. Men taking classwork are divided into teams and receive the benefit of cooperative effort as well as the advantages of healthful, big-muscle activities.

2 2-hour laboratory periods, 1st half of semester, credit, 1

The DEPARTMENT.

4. **II. PHYSICAL EDUCATION ACTIVITY. RECREATION.** (Formerly 3. III.)—For freshmen. Outdoor games in the regular classwork include soft ball, cricket simplified volley ball, swimming, tennis, and miscellaneous games using their respective skills, such as long base, end ball, home run ball, volley ball newcomb and dodge volley ball. Men may elect freshman baseball or freshman track. The course aims to encourage health habits and to give a fund of exercise material for use in after-school days.

2 2-hour laboratory periods, 2d half of semester, credit, 1

The DEPARTMENT.

23. **I. PHYSICAL EDUCATION ACTIVITY. RECREATION.** (Formerly 25. I.)—For sophomores. Continuation of Course 3 with more difficult skills and coordinations. Advanced soccer and touch football and swimming, and miscellaneous games using their respective skills are included; a physical achievement test consisting of track and field events is given. Men may elect tennis, golf, varsity football, varsity cross country or varsity soccer. The course aims to develop skills that will make participation pleasurable and establish exercise habits for later life.

2 2-hour laboratory periods, 1st half of semester, credit, 1

The DEPARTMENT.

24. **II. PHYSICAL EDUCATION ACTIVITY. RECREATION.** (Formerly 26. III.)—For sophomores. Continuation of Course 4, with progression. Archery badminton, golf, soft ball, swimming, and advanced volley ball and miscellaneous games utilizing their respective skills are included. The men are introduced to these games with carry-over value during the first half of the course and may then specialize in one of them for the remainder of the course. Leadership followship, and self-expression through participation are emphasized. Men may elect tennis, golf, varsity baseball or varsity track.

2 2-hour laboratory periods, 2d half of semester, credit, 1

The DEPARTMENT.

[All undergraduate students are given a physical examination upon entering.]

Elective Courses.

Admission by permission only.

51. **I. PHYSICAL EDUCATION THEORY AND PRACTICE. OUTLINE AND NORMAL COURSE FOR TEACHER-COACHES.** (Formerly 71. I.) — For juniors and seniors. This course outlines the coaching of football, soccer, and basketball. There are several lectures on competitive psychology. Lectures, collateral readings, theory situations, and notebook. Directed teaching, practice teaching, observation, officiating, and supervision of football, soccer, basketball, and physical education classes.
2 class hours.

1 2-hour laboratory period, by arrangement, credit, 3.
The DEPARTMENT.

52. **II. PHYSICAL EDUCATION THEORY AND PRACTICE. OUTLINE AND NORMAL COURSE FOR TEACHER-COACHES.** (Formerly 81. II. and 91. III.) — For juniors and seniors. Continuation of Course 51. This course outlines the coaching of baseball, track and field athletics, and hockey and winter sports, also lectures on athletic pedagogy. Lectures, collateral readings, theory situations, and notebook. Directed teaching, practice teaching, observation, officiating, and supervision of baseball, track and field athletics, hockey, winter sports, miscellaneous games, intramural athletics, and physical education classes.
2 class hours.

1 2-hour laboratory period, by arrangement, credit, 3.
The DEPARTMENT.

53. **I. PHYSICAL EDUCATION THEORY AND PRACTICE. SCHOOL PROGRAMS OF PHYSICAL EDUCATION.** (Formerly 74. I.) — For juniors and seniors. This course includes lectures covering the objectives, organization, significance, and content of school programs in grade and high school. The course is correlated with the requirements of the State Department of Education. Rhythmic, folk dancing, games, marching, story plays, self-testing activities, apparatus work, posture training, achievement tests, miscellaneous games, and intramural contests are considered.

1 class hour.

1 2-hour laboratory period, by arrangement, credit, 2.
The DEPARTMENT.

54. **II. PHYSICAL EDUCATION THEORY AND PRACTICE. SCHOOL PROGRAMS OF HEALTH EDUCATION. FIRST AID AND TRAINING.** (Formerly 85. II. and 95. III.) — For juniors and seniors. This course gives the teaching supervision, and administration of secondary school health programs. Progression of content, methods of presentation, and motivation will be considered. Duties of health counselors and the coordination of all health factors for the child are stressed. Trends in health education, use of materials, health tests and measurements as well as the teaching of health habits, and safety education set-ups are considered. This course also consists of first aid as applied in the home, on the street, and on the athletic field. Prevention of athletic injuries, determination of fatigue, and conditioning are considered. Practice is given in bandaging and taping. Men who complete this course satisfactorily will be given American Red Cross First Aid Certificates. Lectures, demonstrations, and notebook.

1 class hour.

1 2-hour laboratory period, by arrangement, credit, 2.
The DEPARTMENT.

55. **I. PHYSICAL EDUCATION THEORY. HISTORY AND PURPOSES OF PHYSICAL EDUCATION.** (Formerly 84. II.) — For juniors and seniors. A brief study of the history of the development of the various systems of physical education and the men who promoted them and a study of the aims and ideals of present-day physical educators. Lectures, textbooks, reports on assigned readings, and a final outline.

1 class hour.

Credit, 1.
The DEPARTMENT.

56. **II. PHYSICAL EDUCATION THEORY AND PRACTICE. TRAINING COURSE FOR CAMP COUNSELORS.** (Formerly 96. III.) — For juniors and seniors. A study of the organized camp as a part of education and the qualifications necessary

to become camp counselors. Development, objectives, and educational aims of the organized camp, and types and equipment of camps are considered. A job analysis of the camp counselor is made. Special skills and the theory and practice of camping in the open are considered.

1 class hour.

1 2-hour laboratory period, by arrangement, credit, 2.

The DEPARTMENT.

WOMEN.

Required Courses.

1. **I. HYGIENE.**—For freshmen. Lectures on personal hygiene, including the physiological basis for sound health habits, the importance of the systematic planning of a student's daily program in order to provide the proper amounts of time for study, with suitable periods of sleep, relaxation, recreation, and sports; posture, appropriate types of exercise, proper nutrition, social adjustment, the necessity for frequent medical, optical, and dental advice; sanitation and group health requirements.

1 class hour.

Credit, 1.

Professor RADCLIFFE.

7. **I. RECREATION.** (Formerly 4. I. and 5. II.)—For freshmen. Outdoor season: archery, games, soccer, special gymnastics, tennis, track; indoor season: badminton, basketball, clog, folk, and tap dancing (rhythmic dances), special gymnastics, swimming, volley ball, games.

2 2-hour laboratory periods, credit, 2.

Mrs. HICKS.

8. **II. RECREATION.** (Formerly 5. II. and 6. III.)—For freshmen. Indoor season: badminton, basketball, clog, folk, and tap dancing, special gymnastics, indoor baseball, swimming, volley ball, games; outdoor season: archery, baseball, special gymnastics, tennis, track.

2 2-hour laboratory periods, credit, 2.

Mrs. HICKS.

27. **I. RECREATION.**—For sophomores. Outdoor season: archery, soccer, special gymnastics, tennis, track; indoor season: badminton, basketball, dancing, special gymnastics, swimming.

2 2-hour laboratory periods, credit, 2.

Mrs. HICKS.

28. **II. RECREATION.**—For sophomores. Indoor season: badminton, basketball, dancing, special gymnastics, indoor baseball, swimming; outdoor season: archery, baseball, special gymnastics, tennis, track.

2 2-hour laboratory periods, credit, 2.

Mrs. HICKS.

Elective Courses.

61. **I. 62. II. RECREATION.** (Formerly 50. II.)—For juniors. Outdoor season: sports and games depending upon the physical condition and needs of the students; indoor season: natural dancing.

2 1-hour laboratory periods, credit, 1.

Mrs. HICKS.

81. **I. 82. II. RECREATION.** (Formerly 76. II.)—For seniors. Outdoor season: sports and games for physical benefits and further development of skill and for social contacts; indoor season: natural dancing.

2 1-hour laboratory periods, credit, 1.

Mrs. HICKS.

THE M. S. C. BULLETIN

AMHERST, MASSACHUSETTS

VOLUME XXV

APRIL, 1933

NUMBER 4

PUBLISHED EIGHT TIMES A YEAR BY THE MASSACHUSETTS STATE COLLEGE. ENTERED
AT THE POST OFFICE, AMHERST, MASS., AS SECOND CLASS MATTER.

HIGH SCHOOL GUEST DAY NUMBER



MEMORIAL HALL, REGISTRATION HEADQUARTERS

A PROGRAM AND AN INVITATION

TO VISIT

MASSACHUSETTS STATE COLLEGE

ON

SATURDAY, MAY 6, 1933



THE LIBRARY REFLECTED IN THE CAMPUS POND

An Invitation from the President

It is very pleasant for me to have my first message to Massachusetts High School Students take the form of an invitation to visit State College. I understand that this college was one of the first to set aside a day each year especially for the entertainment of high school students and the fact that the occasion has been continued regularly for twenty-four years must indicate its importance in the relationship between the College and the young people of the State.

It seems to me that High School Guest Day must afford an excellent opportunity for all who are interested in the educational program of the College to inspect the buildings and equipment, meet the faculty and students and learn more fully of the course of study, entrance requirements, etc. A program has been arranged which will prove both interesting and helpful. We shall make every effort to make the day worth while for our visitors.

I extend a most sincere invitation to high school juniors and seniors and to their teachers and principals to visit State College on Saturday, May 6.

HUGH P. BAKER,
President.



Information

Invitation cards which will admit visitors to the events of the day will be supplied to high school juniors and seniors by members of the Massachusetts State College faculty or student body. These cards also may be secured from high school principals or teachers.

In addition to the invitation card another card will be distributed on which the guest may indicate his or her wish to visit particular departments of the College. Groups of these visitors, accompanied by a member of the Mass. State faculty, will leave Memorial Hall at 10:15 on Saturday morning, May 6, to inspect, in detail, the various departments.

The program is planned so that most guests will be able to return to their homes on the evening of May 6. Those who live so far away as to make this impractical will be housed by the College. We shall appreciate it if all guests who will need overnight accommodations will write two weeks in advance, if possible, to the Field Secretary.



Visit the Campus Buildings

Buildings and class rooms at Mass. State will be open for inspection on High School Guest Day, and all visitors will be cordially welcome in these buildings.

See last page for the detailed program.

HIGH SCHOOL GUEST DAY

The Social Sciences

English, French, German, economics, sociology, history, music and education are subjects taught at Mass. State in the division of social sciences.

The courses in English are intended to enable students to express themselves clearly and effectively. Courses in French and German, in addition to giving practical knowledge of these languages, introduce the student to the history and the artistic heritage of the French and German people.

Music is taught in relation to its history and interpretation.

Courses in history and sociology are planned to give the student a knowledge which every active citizen and educated man should have.

The study of economics, both general and as applied directly to agriculture, gives a knowledge of the basic principles of business and industry.

The department of education has as its primary aim the training of students who wish to engage in educational work.



Military

In accordance with one of the provisions of the Federal Land Grant by which Massachusetts State College was established, a course in military instruction is offered in the form of cavalry drill. The first two years' course is required of all men students and those who elect and satisfactorily complete the four year course are qualified to become reserve officers in the United States Army.

Visitors will be interested in the rifle gallery range and the stables where the horses are quartered. The student horse show at the riding park at nine thirty o'clock will exhibit one of the phases of the military training program on this campus.



Home Economics

Home economics is distinctly a woman's field in which this College provides excellent training.

The practice house, located next to the women's dormitory is well worth a visit by any one interested in home economics. This is an old colonial house, recently renovated, and serves as a very attractive home where major students put into actual operation some of the instruction of the classroom.

MASSACHUSETTS STATE COLLEGE

The Physical and Biological Sciences

Bacteriology

Botany

Chemistry

Entomology

Geology

Mathematics

Physics

Veterinary Science

Zoology

These departments are housed in seven buildings on the campus. Members of the faculty will be present in each building to explain the work of the department and in many of the buildings class work and exhibits will make a visit most interesting.

The Department of Botany calls attention to the unique collection of plants in the Durfee Plant House and to the synoptical exhibit of plants, the botanical museum and the grotto and aquarium in Clark Hall. Interesting exhibits will be on display in Goessmann Laboratory illustrating some of the work of the Department of Chemistry. There are many interesting things to see in Fernald Hall which houses the Department of Entomology, Zoology and Geology. These include an extensive collection of insects, the zoology museum and the geology museum. Visitors may also be interested in visiting the apiary to see the work in beekeeping.



Physical Education

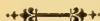
The new Physical Education Building with its swimming pool and its exercise cage, 150 by 180 feet, is well worth a visit. This splendid building provides practically every modern facility for physical education and compares favorably with similar equipment in any New England college.

A program of intercollegiate and intramural athletics provides opportunity for participation of every student in college. More than fifty graduates of the College are engaged in coaching work in secondary schools and colleges. Increasing attention is being given to the training of men who wish to follow this vocation.

Agriculture

The Departments of Agricultural Engineering, Agronomy, Animal Husbandry, Dairy Industry, Farm Management and Poultry Husbandry are included in the Division of Agriculture.

Guests are urged to visit the dairy industry building (Flint Laboratory) where there will be opportunity to see up-to-date equipment for the handling of market milk and for the manufacture of ice cream, butter, and many kinds of cheese. The dairy exhibit room will also be open where much can be learned relative to the many interesting products made from milk. Here also are found exhibits showing the remarkable food value of dairy products. Modern farm machinery and general shop equipment will be on display in the Agricultural Engineering Building, as well as samples of student work. The livestock at Mass. State compares favorably with that at any state college in the country. The barns and stables will be open for inspection. The Department of Agronomy will arrange special exhibits in Stockbridge Hall showing soils, fertilizers, field crops and special work in the construction and maintenance of golf greens. Those interested in poultry husbandry will find a visit to the poultry plant exceedingly interesting. The Department of Farm Management will have an exhibit.



Horticulture

The Division of Horticulture includes the Departments of Floriculture, Forestry, Horticultural Manufactures, Landscape Architecture, Olericulture and Pomology.

The Horticultural Manufactures building is well worth a visit. At this laboratory fruits and vegetables are preserved or manufactured into various products. A special exhibit of the work in forestry will be arranged at French Hall and will include instruments and equipment used in forestry work. The Pomology Department will demonstrate spraying and dusting equipment, orchard machinery and refrigeration machinery at Fisher Laboratory and the orchards on the hill. The work of students in Floriculture will be illustrated by exhibits of flower arrangements, dish gardens, and plans for garden borders. Many interesting plants may also be seen in the floricultural greenhouses. An exhibition of drawings and other student work in landscape architecture will be on view at Wilder Hall. Laboratory exercises in designing and surveying will also be in progress.



Stockbridge School

The Stockbridge School of Agriculture at Mass. State offers a two year course in vocational agriculture. Information concerning this course may be obtained at the Office of the Director on High School Guest Day.



STOCKBRIDGE HALL CONTAINS BOWKER AUDITORIUM AND
MANY CLASS ROOMS AND LABORATORIES

**HIGH SCHOOL GUEST DAY
MASSACHUSETTS STATE COLLEGE**

Program

Saturday, May 6, 1933

- 9:00-12:00 M. Registration and inspection of campus.
 Registration desk is in Memorial Hall.
 Exchange invitation cards for ticket admitting to the events
 of the day.
- 9:30 A.M. Horse Show—Riding Park—Auspices of Military Department.
- 9:30-11:30 A.M. Dean Lanphear will be in Room 1, Memorial Hall, to explain
 entrance requirements through personal interview.
- 10:15 A.M. Personally conducted groups leave Memorial Hall to visit
 various departments.
- 11:45 A.M. President Baker will meet high school teachers in the Alumni
 Room, Memorial Hall.
- 11:30-12:00 M. Dean Lanphear will give a general explanation of entrance
 requirements in the Auditorium, Memorial Hall.
- 11:30- 1:00 P.M. Dinner may be secured in the college cafeteria at moderate
 cost.
- 1:15 P.M. Student Dramatics—Stockbridge Hall—"Peg O' My Heart"
 by J. Hartley Manners.
- 3:45- 4:30 P.M. Room 1, Memorial Hall, Dean Lanphear will be available for
 personal interviews.
- 4:00 P.M. Varsity Baseball—Mass. State vs. Connecticut State.



HIGH SCHOOL GUEST DAY
(For High School Juniors and Seniors)
SATURDAY, MAY 6, 1933

For invitation cards or further information write to

FIELD SECRETARY
MASSACHUSETTS STATE COLLEGE
AMHERST, MASSACHUSETTS.

THE M. S. C. BULLETIN

AMHERST, MASSACHUSETTS

VOLUME XXV

MAY, 1933

NUMBER 5

PUBLISHED EIGHT TIMES A YEAR BY THE MASSACHUSETTS STATE
COLLEGE. ENTERED AT THE POST OFFICE, AMHERST,
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COMMENCEMENT NUMBER

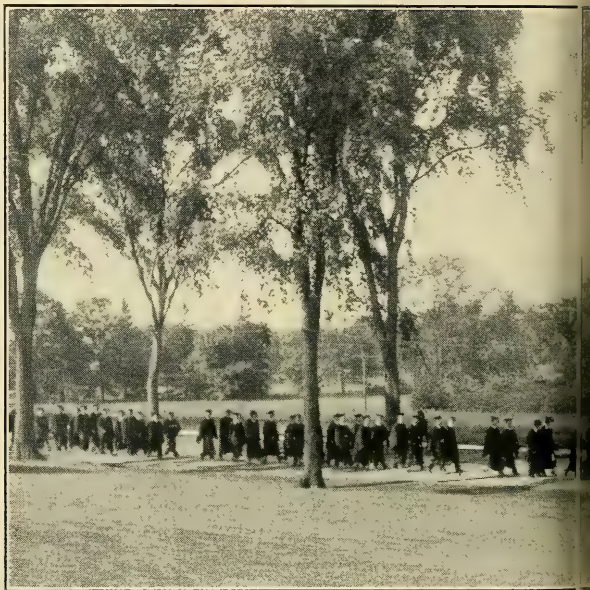


This is likely to happen again on June 10

MASSACHUSETTS STATE COLLEGE

THIS ISSUE OF THE BULLETIN CONTAINS INFORMATION
CONCERNING THE SIXTY-THIRD COMMENCEMENT TO
BE HELD AT THE COLLEGE, JUNE 9 TO 12, 1933.

*"The campus
and the old
elm trees."*



The President's Letter

TO STATE COLLEGE ALUMNI:

Commencement at State College this year promises to be an unusual occasion—for me, because of the opportunity it will give me to meet many of the Alumni and through the festivities of the occasion increase my acquaintance with them—for you, because conditions today are such as to make a celebration like our Commencement an inspiring change. The Campus of this College is a beautiful spot in June and I don't see how any of you, who remember it from student days, can withstand the reunion call.

As the President of the College, I am expected to extend an official invitation to all of you to return to Alma Mater for the Commencement celebration in June and this I do most heartily. We are making special plans this year to make greater use of the beautiful lawns and trees of the Campus as settings for our activities. I do hope that we may have many of you with us in June.

Sincerely yours,

HUGH P. BAKER

SIXTY-THIRD COMMENCEMENT



Program

FRIDAY,
JUNE 9, 1933

- 6:00 P. M. Alumni Class Suppers.
- 7:30 P. M. Flint Oratorical Contest. Memorial Hall.
- 9:00 P. M. Student Dramatics. Out-door presentation of "As You Like It," The Ravine.

SATURDAY, JUNE 10, ALUMNI DAY

- 8:30 A. M. Roister Doister Breakfast, Draper Hall.
- 10:30 A. M. Annual Meeting Associate Alumni, Memorial Hall.
- 12:30 P. M. Alumni Luncheon, Draper Hall.
- 1:30 P. M. Alumni Reunion Program, The Ravine.
- 2:45 P. M. Alumni Parade from Memorial Hall.
- 3:30 P. M. Varsity Baseball Game with Amherst, Alumni Field.
- 6:00 P. M. Fraternity and Class Reunions.
- 9:00 P. M. Student Dramatics. Out-door presentation of "As You Like It," The Ravine.

SUNDAY, JUNE 12, BACCALAUREATE SUNDAY

- 9:00 A. M. Academics and Varsity Clubs Breakfast Meetings, Draper Hall.
- 12:00 M. Class Reunions.
- 3:30 P. M. Baccalaureate Service, Bowker Auditorium Address by Dr. James Gordon Gilkey, Pastor, South Congregational Church, Springfield.
- 5:00 P. M. President's Reception, The Hills Gardens.
- 7:00 P. M. Band Concert, Rhododendron Garden.

MONDAY, JUNE 13, CLASS DAY

- 9:00 A. M. Semi-Annual Meeting of the Board of Trustees.
- 10:00 A. M. Senior Class Day Exercises, Rhododendron Garden.
- 2:00 P. M. Academic Procession from Fernald Hall.
- 2:30 P. M. Graduation Exercises, Rhododendron Garden, Address by His Excellency, Joseph B. Ely, Governor of the Commonwealth and President of the Board of Trustees.
- 8:00 P. M. Sophomore-Senior Hop, Drill Hall.

On The Alumni Reunion Program

1883 (50 year class) HOMER J. WHEELER, 386 N. Fullerton Ave., Upper Montclair, N. J.

1908 (25 year class) S. LOTHROP DAVENPORT, North Grafton, Mass.

1923 (10 year class) OWEN E. FOLSOM, Boston, Mass.

Alumni Marshal WILBUR H. MARSHMAN '23, Springfield, Mass.

Reunion Classes

All of the classes listed below have indicated intentions of holding reunions. Further detailed information regarding these reunions will be presented through the Alumni Bulletin and class letters.

1871 Secretary: E. E. Thompson, West Medway, Mass. The original class. Sixty-two years graduated. Headquarters Room 3, Memorial Hall.

1883 Secretary: Dr. Joseph B. Lindsey, 47 Lincoln Avenue, Amherst, Mass. The fifty year class. Headquarters, Dr. Lindsey's residence and Room 4, Memorial Hall.

1888 Secretary: Herbert C. Bliss, 87 Alfred Drum Road, West Barrington, R. I. Headquarters, Room 7, Memorial Hall.

1891 Secretary: Dr. Harvey T. Shores, Bernardston, Mass. (The class with the attendance-cup-winning complex). Headquarters, Room 1, Physical Education Building.

1893 Secretary: Fred A. Smith, 420 Maple Street, Danvers, Mass. Headquarters, Room 2, Memorial Hall.

1898 Secretary: Willis S. Fisher, 108 Ontario Street, Providence, R. I. Headquarters, Room 8, Memorial Hall.

1903 Secretary: Gerald D. Jones, North Amherst, Mass. Headquarters, Trophy Room, Physical Education Building.

1908 Secretary: Roland H. Verbeck, Amherst, Mass. Headquarters, Paige Laboratory.

1913 Secretary: Benjamin W. Ellis, Storrs, Conn. Fred D. Griggs, 35 Eton Street, Springfield, Mass., Chairman, reunion committee. Headquarters, Room 10, Physical Education Building.

1918 Secretary: Marshall O. Lanphear, Amherst, Mass. Headquarters, Senate Room, Memorial Hall.

1919 Secretary: Ralph T. Howe, Lowell Road, Concord, Mass. Headquarters, Room 2, Physical Education Building.

1923 Secretary: Luther B. Arrington, New Jersey Experiment Station, New Brunswick, N. J. Headquarters, Alumni Room, Memorial Hall.

1928 President, John F. Quinn, 418 Livingstone Hall, Columbia University, New York City. Headquarters, Room 9, Physical Education Building.

1930 President, Raymond S. Mann, 237 High Street, Dalton, Mass. Headquarters, Loggia, Memorial Hall.

1932 President, John J. Foley, Apt. 4-G London Terrace, 465 West 23rd Street, New York City. Headquarters, Auditorium, Memorial Hall.

THE M. S. C. BULLETIN

Amherst, Massachusetts

VOLUME XXV

JUNE, 1933

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Published eight times a year by the Massachusetts State College
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ANNOUNCEMENT

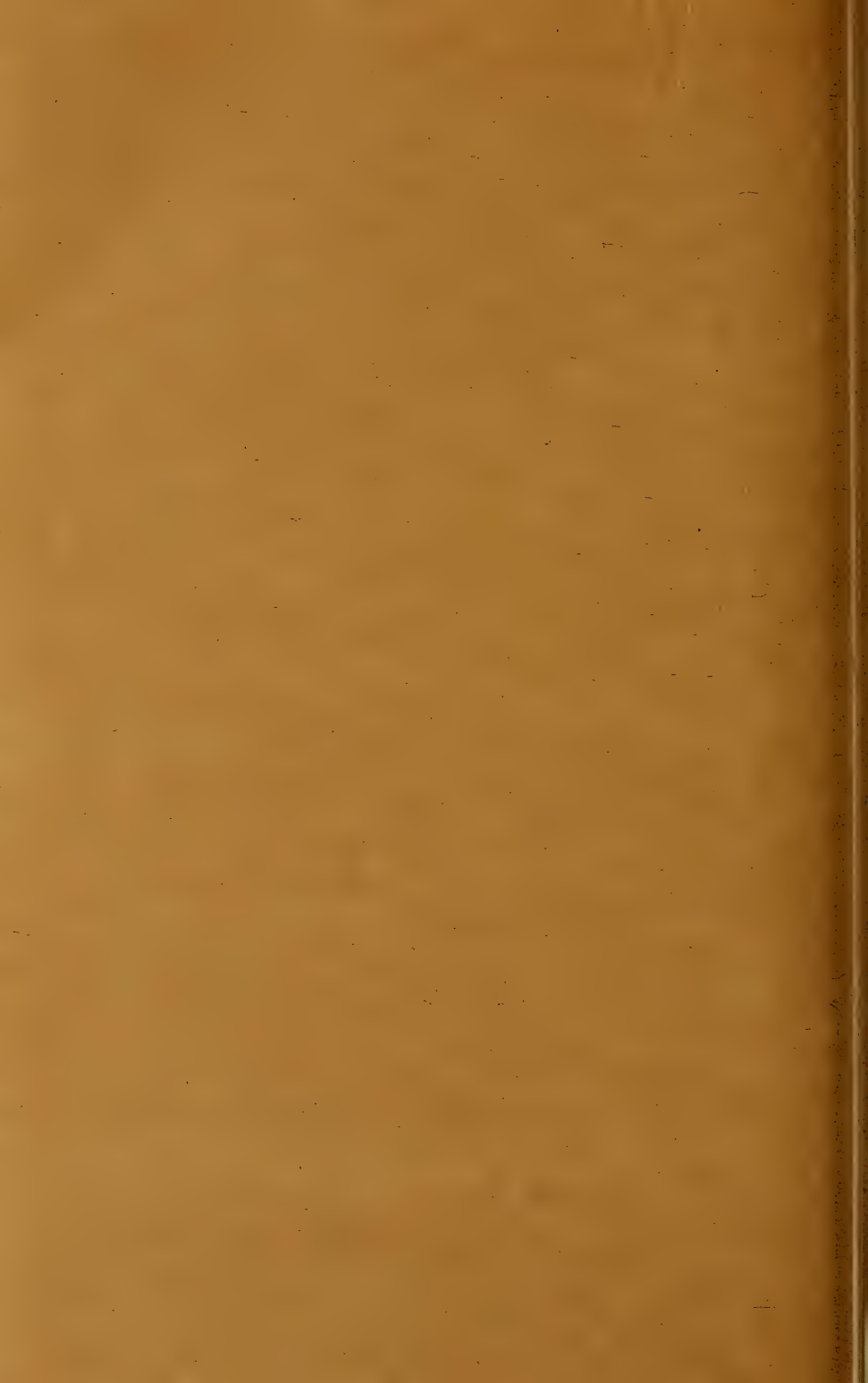
OF THE

STOCKBRIDGE SCHOOL OF AGRICULTURE

For the Sessions of 1933-34

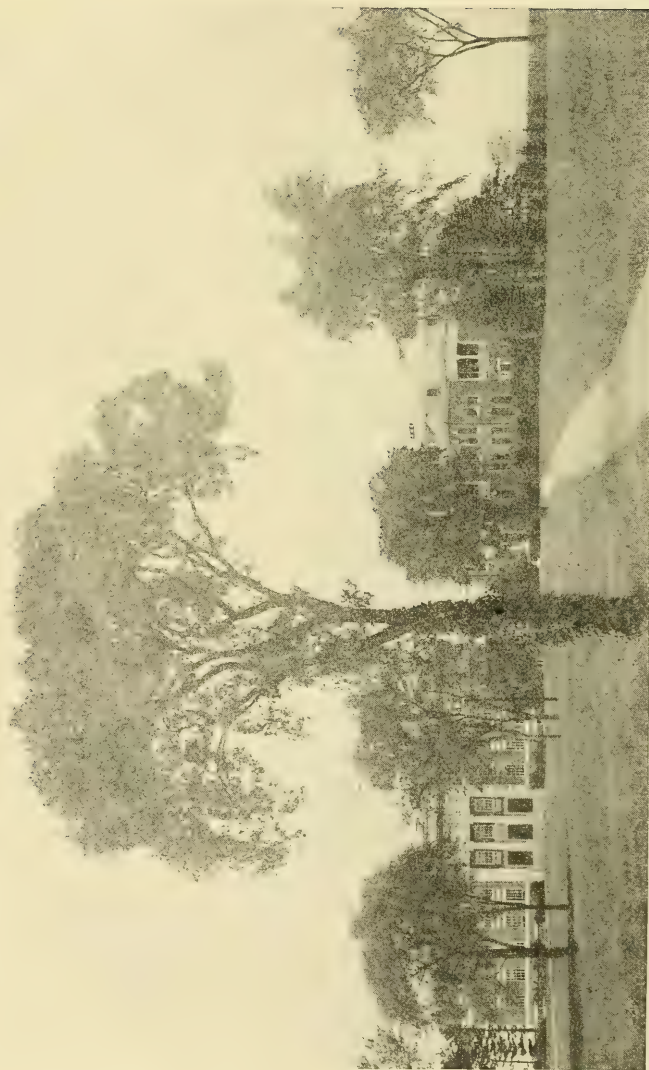


Massachusetts State College



ANNOUNCEMENT
OF
THE STOCKBRIDGE SCHOOL OF AGRICULTURE
AT
Massachusetts State College

This issue of The Bulletin contains information concerning the two year course in practical agriculture at the Massachusetts State College which course is known as The Stockbridge School, named after an early president of the College. Included herein are descriptions of the various courses offered, information concerning expenses, enrollment, regulations, etc. On the last two pages will be found forms for application and certificate of citizenship.



Stockbridge Hall and Dining Hall

CALENDAR, 1933-1934

THE STOCKBRIDGE SCHOOL OF AGRICULTURE

1933

October 2, Monday	Freshman Registration
October 3, Tuesday	Senior Registration
October 4, Wednesday	First semester begins for Seniors
October 12, Thursday	Holiday, Columbus Day
November 11, Saturday	Holiday, Armistice Day
November 29 — December 4, Wednesday, 12:00 M. — Monday, 8:00 A.M.	Thanksgiving Recess
December 20 — January 2, Wednesday, 12:00 M. — Tuesday, 8:00 A.M.	Christmas Recess

1934

February 3, Saturday	First semester ends
February 7, Wednesday, 8:00 A.M.	Second semester begins
February 22, Thursday	Holiday, Washington's Birthday
March 31 — April 9, Saturday, 12:00 M. — Monday, 8:00 A.M.	Spring Recess
April 19, Thursday	Holiday, Patriots' Day
May 30, Wednesday	Holiday, Memorial Day
June 1-4, Friday—Monday	Commencement
October 1, Monday	Freshman Registration
October 2, Tuesday	Senior Registration
October 3, Wednesday	First semester begins for Seniors
October 12, Friday	Holiday, Columbus Day
November 12, Monday	Holiday, Observance of Armistice Day
November 28 — December 3, Wednesday, 12:00 M. — Monday, 8:00 A.M.	Thanksgiving Recess
December 19 — January 2, Wednesday, 12:00 M. — Wednesday, 8:00 A.M.	Christmas Recess

1935

February 2, Saturday	First semester ends
February 6, Wednesday, 8:00 A.M.	Second semester begins
February 22, Friday	Holiday, Washington's Birthday
March 30 — April 8, Saturday, 12:00 M. — Monday, 8:00 A.M.	Spring Recess
April 19, Friday	Holiday, Patriots' Day
May 30, Thursday	Holiday, Memorial Day
May 31 — June 3, Friday—Monday	Commencement

STAFF

Officers of General College Administration

HUGH P. BAKER, M.F., D.OEC.
President of the College

WILLIAM L. MACHMER, A.M.
Dean of the College
FRED C. KENNEY
Treasurer of the College

ROBERT D. HAWLEY, B.S.
Secretary of the College
BASIL B. WOOD, A.B.
Librarian of the College

ROLAND H. VERBECK, B.S.
Director of Short Courses

STOCKBRIDGE ADVISORY COMMITTEE

President, HUGH P. BAKER

<i>Director, ROLAND H. VERBECK, Chairman</i>	<i>Assistant Professor GRANT B. SNYDER</i>
<i>Professor LYLE L. BLUNDELL</i>	<i>Instructor HARRY G. LINDQUIST</i>
<i>Assistant Professor LUTHER BANTA</i>	<i>Instructor RANSOM C. PACKARD</i>
<i>Assistant Professor ROLLIN H. BARRETT</i>	<i>Instructor OLIVER C. ROBERTS</i>
<i>Assistant Professor GUY V. GLATFELTER</i>	<i>Instructor HAROLD W. SMART</i>
<i>Assistant Professor S. CHURCH HUBBARD</i>	<i>Instructor CHARLES H. THAYER</i>
<i>Assistant Professor MINOR J. MARKUSON</i>	<i>Secretary ROBERT D. HAWLEY</i>

The Faculty of Instruction

LORIN E. BALL, B.S.	3 Allen Street
<i>Instructor in Physical Education</i>	
LUTHER BANTA, B.S.	7 Allen Street
<i>Assistant Professor of Poultry Husbandry</i>	
ROLLIN H. BARRETT, M.S.	4 Chestnut Street
<i>Assistant Professor of Farm Management</i>	
LYLE L. BLUNDELL, B.S.	5 Northampton Road
<i>Professor of Horticulture</i>	
WILLIAM H. DAVIS, Ph.D.	12 Nutting Avenue
<i>Assistant Professor of Botany</i>	
LAWRENCE S. DICKINSON, B.S.	2 Farview Way
<i>Assistant Professor of Agronomy</i>	
RICHARD C. FOLEY, M.S.	Campus
<i>Instructor in Animal Husbandry</i>	
JULIUS H. FRANDSEN, B.S., Agrl., M.S.	35 Lincoln Avenue
<i>Professor of Dairying and Head of Department</i>	
ARTHUR P. FRENCH, M.S.	North Amherst
<i>Assistant Professor of Pomology</i>	
GUY V. GLATFELTER, M.S.	29 Northampton Road
<i>Assistant Professor of Animal Husbandry</i>	

JOHN C. GRAHAM, B.S. Agri. <i>Professor of Poultry Husbandry and Head of Department</i>	68 Lincoln Avenue
EMORY E. GRAYSON, B.S. <i>Supervisor of Placement Training</i>	37 Cottage Street
JAY L. HADDOCK, M.S. <i>Instructor in Agronomy</i>	21 Main Street
MARGARET HAMLIN, B.A. <i>Vocational Counsellor for Women</i>	12 North East Street
CURRY S. HICKS, B.Pd., M.Ed. <i>Professor of Physical Education and Hygiene and Head of Department</i>	Sunset Avenue
MRS. CURRY S. HICKS, B.A. <i>Physical Director for Women</i>	Sunset Avenue
ROBERT P. HOLDSWORTH, M.F. <i>Professor of Forestry</i>	32 Amity Street
S. CHURCH HUBBARD. <i>Assistant Professor of Floriculture</i>	North Amherst
CLAUDE R. KELLOGG, A.M. <i>Assistant Professor of Entomology and Beekeeping</i>	20 Amity Street
HELEN KNOWLTON, A.M. <i>Assistant Professor of Home Economics</i>	The Homestead
JOHN B. LENTZ, A.B., V.M.D. <i>Professor of Veterinary Science and Head of Department</i>	3 Dana Street
HARRY G. LINQUIST, M.S. <i>Instructor in Dairying</i>	17 Fearing Street
ADRIAN H. LINDSEY, Ph.D. <i>Professor of Agricultural Economics</i>	12 Taylor Street
WAYNE J. LOWRY, M.S. <i>Instructor in Horticulture</i>	53 Lincoln Avenue
MINER J. MARKUSON, B.S. <i>Assistant Professor of Agricultural Engineering</i>	16 Nutting Avenue
MERRILL J. MACK, M.S. <i>Assistant Professor in Dairying</i>	32 North Prospect Street
JOHN B. NEWLON. <i>Instructor in Agricultural Engineering</i>	North Amherst
RANSOM C. PACKARD, M.S. <i>Instructor in Bacteriology</i>	North Amherst
GEORGE F. PUSHEE. <i>Instructor in Agricultural Engineering</i>	North Amherst
ERNEST J. RADCLIFFE, M.D. <i>Professor of Hygiene and Student Health Officer</i>	Lincoln Block
CECIL C. RICE, M.S. <i>Instructor in Horticultural Manufacturers</i>	35 Lincoln Avenue
VICTOR A. RICE, M.Agri. <i>Professor of Animal Husbandry and Head of Department, Head of Division of Agriculture</i>	35 Woodside Avenue
OLIVER C. ROBERTS, B.S. <i>Instructor in Pomology</i>	10 Nutting Avenue
JOSEPH R. ROGERS, JR. <i>Instructor in Swimming</i>	Pelham Road
DONALD E. ROSS, B.S. <i>Foreman, Department of Floriculture</i>	27 South Prospect Street
WILLIAM C. SANCTUARY, M.S. <i>Professor of Poultry Husbandry</i>	5 Allen Street
FRED C. SEARS, M.S. <i>Professor of Pomology and Head of Department</i>	Mount Pleasant
EDNA L. SKINNER, M.A. <i>Professor of Home Economics, Head of Department and Adviser of Women</i>	30 Fearing Street
HAROLD W. SMART, LL.B. <i>Instructor in Business Law, Business English and Rural Sociology</i>	Butterfield Terrace
GRANT B. SNYDER, B.S.A. <i>Assistant Professor of Vegetable Gardening</i>	North Amherst
WILLIAM H. TAGUE, B.S. <i>Assistant Professor of Agricultural Engineering</i>	25 Cottage Street
CHARLES H. THAYER. <i>Instructor in Agronomy</i>	South East Street
CLARK L. THAYER, B.S. <i>Professor of Floriculture and Head of Department</i>	Mount Pleasant
ALDEN P. TUTTLE, M.S. <i>Instructor in Vegetable Gardening</i>	120 Pleasant Street
RALPH A. VANMETER, M.S. <i>Professor of Pomology and Head of Division of Horticulture</i>	North Amherst
JOHN H. VONDELL. <i>Foreman of Poultry Plant and Instructor in Poultry Husbandry</i>	24 Fearing Street

THE STOCKBRIDGE SCHOOL OF AGRICULTURE

A Two-Year Course in Practical Agriculture

The Stockbridge School of Agriculture, organized in 1918, is a separate and distinct department of the College providing training of a strictly vocational type in the fields of agriculture and horticulture.

Seven programs of study are offered, one of which must be selected by each student and completed as specified to be eligible for the school diploma. The present list of offerings includes:

- | | |
|-----------------------------------|---------------|
| 1. Animal Husbandry | (see page 14) |
| 2. Dairy Manufactures | (" " 17) |
| 3. Poultry Husbandry | (" " 20) |
| 4. Floriculture | (" " 22) |
| 5. Fruit Growing | (" " 24) |
| 6. General Horticulture | (" " 28) |
| 7. Vegetable Gardening | (" " 31) |

Since its organization at the request of the Massachusetts Legislature, the school has registered over 1,800 students, graduated fourteen classes numbering more than 1,000 members, and enrolled for the last school year (1932-33) 238 young men and women.

The largest number of students comes from Massachusetts, but all the New England States are represented in the student body, as well as New York, Pennsylvania, New Jersey, Illinois, and Michigan.

The value of this kind of concentrated, technical schooling, aiming directly toward preparation for a definite field of work, is amply demonstrated by the useful careers of our graduates.

General Information

Entrance Conditions.—The course is open to any student who is seventeen years of age or over and who has completed at least an elementary school course or its equivalent.

The Stockbridge School of Agriculture is not intended for students already enrolled in high schools. Such students should finish the high school course. Students enrolled in high schools who wish to take the course should bring a statement, either from the principal of the high school or from the parent or guardian, requesting enrollment.

Graduates of county schools of agriculture or of agricultural departments of high schools may complete the course for a diploma in one year, if they are recommended by the Director of the school or the agricultural instructor.

How to Enroll.—Fill out application blank in back of catalog giving all information requested. Be sure to indicate course you wish to elect. Mail this form, with citizenship certificate in back of catalog to Director of Short Courses. If application is accepted you will be notified, and certificate of citizenship will be kept on file until you register. No fees are required until registration. Registration will be held in Memorial Hall on Monday, October 2, for freshmen, and Tuesday, October 3, for seniors. All freshmen students should be on campus from the day of registration until classes open on Thursday to meet required appointments for mental tests, physical examinations, individual photographs for office records, and the class suppers on Monday and Tuesday nights when faculty members discuss the work of their respective departments, and successful alumni address the new students.

Instruction.—The instruction is given by the regular faculty by means of classroom teaching, laboratory exercises and practical work. The work of the classroom is supplemented by demonstration work in the laboratory, dairy room, greenhouse and stables. It is designed to offer plain, practical, direct information, and to establish the underlying reasons as well as the method employed in the various operations. The advantages of the college staff of specialists and the college plant with all its resources are thus made available to young men and women electing this course.

Credit and Diploma. — In order to obtain a diploma a student is expected to have satisfactorily completed all the work called for in the general course which he has selected. A student failing to pass the requirements of summer placement training, after a suitable job has been assigned him, is not eligible for graduation until this deficiency is made up, and may not be allowed to enroll for the second year, if the Placement Supervisor considers his record to be unsatisfactory.

Any student against whom bills have been reported to the Director shall have his diploma withheld until such bills have been paid in full.

Scholarship Regulations. — At the close of each semester students receive a formal report showing the standings given in the subjects pursued by them.

If a student's semester mark in any subject falls below 60 per cent, he is thereby failed (F) in that subject. He shall be debarred from taking the final examination in that subject and must repeat it with the following class.

If the average of the semester mark and the final examination is below 60 per cent, the student is thereby conditioned (#).

Student grades will be recorded at the end of the seventh week of each semester and again at the end of the semester. The Faculty Committee will consider all questionable grades after each marking period, and instructors will note on grade reports the names of all students whose work is seriously deficient.

When a student's record indicates failures or uniformly poor work, the Faculty Committee may recommend a close supervision of his work by the faculty adviser in his major course, or, if his scholastic grades disqualify him from further work in the school, he may be asked to withdraw at any time.

A first year student who has deficient scholastic work at the end of the first semester in February shall not be eligible for placement training until his work meets the required standard.

At the end of any semester a student who has a failure in more than one subject or is conditioned in more than two subjects may be dismissed.

RULES AND REGULATIONS

Absences from Class

(1) No unexcused absences will be allowed from classes. (2) All excuses for absence shall be presented by the student in writing, and, if approved by the Director, an excuse card will be granted to be signed by the instructor. Excuse cards must be returned promptly to the office when properly signed. (3) Students presenting excuse cards covering absences are expected to make up all work missed, to the satisfaction of the instructor. (4) Instructors are directed to reduce final grades five points for each unexcused absence occurring on a student's record at the end of any semester. (5) No excuses will be accepted at the Short Course Office unless presented within two days after the student returns to classes. (6) Two tardinesses unexcused shall count as one absence. (7) Absences from classes immediately before or after a holiday are not allowed except by special permission. (8) The Short Course Office requires all students to report at once, any illness to the college physician, particularly if absence from class is likely to result from the illness. (9) Students failing to observe these rules are placed on probation, and may be asked to withdraw from the course if further violations occur.

Absences from Examinations or Tests

(1) Any student who absents himself from an appointed examination without sufficient cause shall be given zero thereon. In such case he shall not be entitled to a make-up examination unless the Director so requests. A previously announced test may, at the discretion of the instructor, be regarded as a test or as an examination.

(2) Every absence taken before enrollment (the signing of the registration card by the teacher) in a class will be counted.

Student Expenses

Tuition. — A tuition fee of \$50 per semester is charged students, residents of Massachusetts, enrolled in the Stockbridge School of Agriculture. Students who are not residents of Massachusetts are charged a tuition fee of \$110 each semester. The tuition per semester, charged persons not citizens of the United States is \$110. Students entering from Massachusetts, unless of voting age themselves, are required to file a statement signed by either town or city clerk, stating that the applicant's father is a legal resident of Massachusetts. (See form in back of catalog.)

The necessary college expenses are estimated as follows: Tuition, for citizens of Massachusetts, first year, first semester, \$50; second semester (eight weeks only) \$25, total \$75. Second year, first semester, \$50; second semester, \$50, total \$100. Total cost of tuition for full course, \$175.

Students not residents of Massachusetts, pay \$110 tuition fee first year, first semester, and \$55 second semester, (eight weeks only). Total tuition, first year \$165. Second year, \$110 each semester, total \$220. Total tuition cost both years, \$385.

Other costs are:

	First Year	Second Year	Total
Room in private houses.....	\$72.00	\$96.00	\$168.00
Board in college cafeteria, weekly ticket 20 meals \$5.50.....	132.00	176.00	308.00
Laundry.....	20.00	30.00	50.00
Books, stationery, etc.....	30.00	45.00	75.00
Totals.....	\$254.00	\$347.00	\$601.00
College tuition fee for citizens of Massachusetts.....	75.00	100.00	175.00
	\$329.00	\$447.00	\$776.00

These figures for board and room are estimates based on prevailing prices and are subject to change when and if conditions change.

Student Activity Charges. — Special fees payable by all students.

Student tax for athletics (yearly).....	\$13.50
Student tax for Social Union and subscription to college paper.....	3.00
Religious work tax.....	.50

Tuition fees and special taxes are payable at the Treasurer's Office not later than one week after date of registration.

The six months' placement training between the first and second years enables a student to earn from \$150 to \$300 depending upon his skill and general ability, and the type of work. Of this amount \$100 to \$200 should be saved to apply to the expenses of the second year.

Prospective students should understand that the above estimates cover expenses which may be called strictly college expenses, and that there are other financial obligations voluntarily placed upon students which they should expect to meet. Chief among these are class assessments and taxes levied for maintenance of various organizations, such as the Social Union, Athletic Association, weekly publications, etc. Such expenses vary from \$15 to \$30 a year. Additional financial responsibility is also assumed by students joining clubs or entering into other social activities of the college. Besides the amount necessary for clothes and traveling, the economical student will probably spend between \$300 and \$400 for the first year of one and one-half semesters in residence, and \$400 to \$500 for the second year of two semesters.

Student Aid

Self Help. — It is recommended that no new student enter without having at least \$250 and preferably \$350 with which to meet the expenses of the first year. **The college does not encourage students to enter without money in the expectation of earning their way entirely.** The student will find it better either to work and accumulate money before coming to college, or to take more than two years in completing his course, or, instead, to borrow money sufficient to carry him through. No student should undertake work that interferes with his studies, and students should understand that, owing to the large number of applications for employment, no one man can

receive a large amount of work at the college. A number of students find opportunities for earning money without depending upon the college to furnish them with work. Opportunities for labor for Stockbridge students on the campus are limited to second year men. Students, therefore, will find it very difficult to obtain any work during their first year.

Rooms

Dormitory rooms are available only to four-year degree students, and accommodate but a small proportion of them. Private homes in the town furnish the only source of rooms for Stockbridge students.

Rooms are inspected by the student health officer and students are expected to make their own rooming arrangements from a list of approved places available at the Short Course Office.

General Exercises

Assembly exercises are held weekly on Wednesdays, 11:00–12:00M. A special chapel service on Sunday is held during the fall and winter months. Students are required to attend these general exercises, although the Director is authorized to excuse from Sunday chapel any student who may object to attendance thereon because of his religious scruples. Freshmen must attend during the first semester.

STUDENT ACTIVITIES

A large number of student organizations furnish opportunity to students for work and leadership.

The Massachusetts State College Social Union was established about fifteen years ago. All students become members of the Union by paying a small fee, and in the fall and winter months the Union gives a series of entertainments, free to students and faculty. The Memorial Building is the center of student activities. Offices for the various student organizations, including the Stockbridge School Student Council, are maintained in this building. On the first floor are located a lounging room, the Memorial Room, and the offices; in the basement, bowling alleys, pool tables, store, post office, and barber shop; and on the second floor an auditorium for meetings and dances. This building was erected by the alumni, students, faculty, and friends in honor of the fifty-one "Aggie" men who gave their lives in the World War.

The Stockbridge School Council is composed of representatives of the first and second year classes. This body serves as general director of conduct in classes, and represents before the faculty the interests of this group of students.

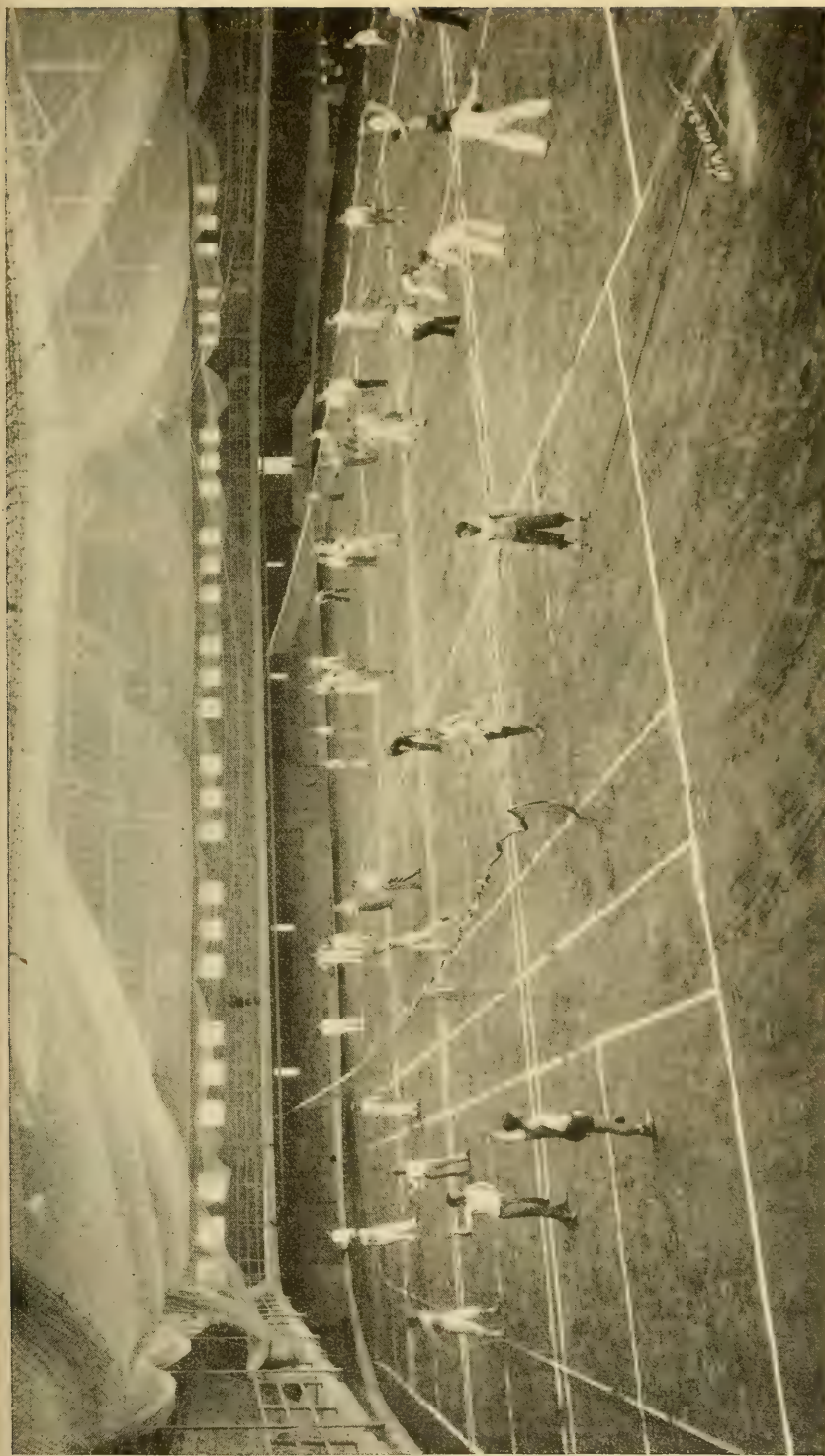
A student yearbook called "The Shorthorn" is published annually by the members of the graduating class, and is usually issued in June. All students subscribe to it.

A School Glee Club brings together during the winter months those who are interested in singing, and for those students who play musical instruments there is a School Orchestra.

In the place of fraternities the faculty have authorized social organizations called "clubs" in the Stockbridge School. There are two such organizations in the student body, the A. T. G. Club and the Kolony Klub.

Athletics and Physical Education. — The School has its own separate athletic program with regular schedules in football, basketball, ice hockey, cross-country and winter track. Sweaters and insignia are awarded to team members and managers in these sports. The official insignia is the letter S.

The football team plays a schedule of 7 games with preparatory school and college freshman teams. The basketball team plays a 10 game schedule; the cross-country team usually runs 3 races, while 2 or 3 meets are scheduled for the winter track squad. Ice hockey affords 6–8 games depending on the weather.



Physical Education Cage

Due to the fact that freshmen are on placement training during the spring term which leaves only seniors available, no regular team is maintained in baseball. Men desiring to play are organized into teams and an intramural league is run. Numerals may be given for this participation.

This athletic program is entirely under the supervision and direction of the Physical Education Department of the College and coaches are provided for all sports. Lorin E. Ball, director of the Stockbridge physical education work is coach of football, basketball, and class baseball; and L. L. Derby, coach of the varsity track team, has charge of the cross-country and winter track squads.

All students are urged to participate in some sport each term. No squads are reduced by eliminating the inexperienced players and everyone is given an opportunity to play in games. The football squads for the past two years have consisted of approximately 50 candidates. Games have been scheduled for both the second and third teams so that every man on the squad has participated in an outside scheduled game. Both the first and second teams in basketball have regularly scheduled games.

Every care is exercised to guard against men overtaxing their strength in any sport or game to the detriment of their health. No man whose physical condition is at all questionable is allowed to play on the teams. A careful check is maintained by required physical examinations for all students given by the college physician at the opening of the school year. A second examination is made of each man before permission is granted to participate in any sport.

Students also subscribe to the college varsity games and have attendance privileges for varsity sports on the campus.

Class work in physical education for men not on athletic squads is required for both seniors and freshmen during the first semester. This consists of 2 class periods a week. The object of this course is to give the men some knowledge of games which may be of value to them in after school days, as well as to give every man an opportunity to develop sufficient control over his body to enable him to get pleasure from physical activities and to establish correct health habits.

The freshmen receive instruction in soft ball, touch football, soccer, golf, and swimming. Men may elect football, cross-country, or tennis instead of the regular class work. The seniors take up volley ball, badminton, archery, and swimming. They may also elect football, cross-country, or tennis. The classes are organized into teams which compete against each other with much rivalry. Students are expected to wear old clothes during the play period, and shower baths are required at the close of each class period.

A new physical education building containing a swimming pool, a great indoor cage 150 by 180 feet for all kinds of sports and games, and complete locker room and shower bath facilities provide ample equipment to carry out this program. Individual equipment is supplied to all members of the football, hockey, basketball, cross-country, and track squads.

STUDENT RELATIONS

The customary high standard of college men in honor, manliness, self-respect, and consideration for the rights of others constitutes the standards of student deportment.

Any student known to be guilty of dishonest conduct or practice must be reported by the instructor to the Director for discipline.

The privileges of the college may be withdrawn from any student at any time if such action is deemed advisable.

It should be understood that the college, acting through its President or any administrative officer designated by him, distinctly reserves the right not only to suspend or dismiss students, but also to name conditions under which students may remain in the institution. For example, if a student is not doing creditable work he may not only be disciplined, but he may be required to meet certain prescribed conditions in respect to his studies, even though under

the foregoing rules his status as a student be not affected. The same provision applies equally to the matter of absences.

Similarly, also, it applies to participation in student activities. Though this will ordinarily be governed by the rules as already laid down, yet if in the judgment of the college authorities a student is neglecting his work on account of these activities, the privilege of participating in them may be withdrawn for such time as is considered necessary. Moreover, it may be withdrawn as a punishment for misconduct.

HEALTH SERVICE

The College endeavors to safeguard the health of all students while on the campus, and for this purpose, maintains a physician as Supervisor of Student Health, a resident registered nurse, and a small Infirmary.

1. The Supervisor of Student Health has offices in the new Physical Education Building where he may be consulted during college hours.

2. Infirmary. — Its purpose is to furnish a suitable place for professional attention in case of illness or accident. The out-patient clinic is held here daily. The infirmary consists of two small buildings quite inadequate for the needs of the College, but it is hoped that in the near future additional buildings may be erected, and the general equipment amplified.

3. Students are urged to consult the Supervisor of Student Health or the resident nurse at the first sign of physical disorder or for even minor accidents. Many severe illnesses and much lost time can be avoided by early or preventive treatment.

4. The infirmary fee will be at the rate of \$2.00 a day, and will be charged when one or more meals are obtained at the infirmary or when the student remains at the infirmary for one or more nights. A nominal charge may be made to out-patients for miscellaneous treatment of a minor character.

5. In addition to the fee charged as specified in paragraph 4, the following additional expenses will be charged to the patients: —

(a) **Nurses.** — In case a special nurse is required for the proper care of an individual the services and board of this nurse will be paid by the patient. Such a nurse will be under the general supervision of the resident nurse.

(b) **Professional Service.** — If a student requires continuous medical attention by a physician, he may be required to select his physician and become responsible for fees charged by that physician.

(c) **Supplies.** — Special medical supplies prescribed by a physician will be charged to the patient.

(d) **Laundry.** — Expense for personal laundry incurred by students while in the infirmary will be charged to the individual student.

THE LIBRARY

The College Library occupies the entire building formerly partly occupied by the chapel. It contains more than 85,000 bound volumes and a very large collection of pamphlets, twice as numerous, which are of great practical value, being monographs on the technical subjects studied in the college. These pamphlets include particularly the publications of the United States Department of Agriculture and those of the State Experiment Stations of other Agricultural colleges in this country and abroad. Among the bound volumes, works on agriculture, horticulture, botany, entomology and the various sciences connected especially with agriculture predominate, but literature, history, economics, religion, sociology and art are also well represented. More than 500 periodicals covering technical and general subjects, and including the best farm papers, are regularly taken and both the current numbers and the back files are readily accessible.

The Library is open for readers from 8 a.m. to 10 p.m. during semester time and during part of Sunday. Vacation hours are somewhat shorter.

Stockbridge students will find in the Library helpful material of many sorts in connection with their work, and are cordially invited to make use of this

material. The librarian and library assistants are always on hand, ready and anxious to help.

AGRICULTURAL OPPORTUNITIES FOR WOMEN

Agriculture is a field in which women have always found some opportunity. There are women farming independently, in all branches of agriculture. As a rule poultry raising, small fruits and vegetable growing and floriculture seem to offer women an easier opportunity than dairy, stock and general farming. Women are also finding some paid positions which include farm and estate workers and managers, garden service workers and agricultural officers in state correctional institutions.

For the woman or girl whose home is already upon the farm the opportunity is exceptionally good. With the help of an agricultural education there are open to her many means of increasing her own or the farm income. With the knowledge of farm life which she already possesses, and with the possibility of securing occasional help from her family, she can easily carry on and develop a profitable enterprise of her own. The Stockbridge School of Agriculture will afford to the women who wish to engage in farming the practical training which they will need to fit them for their work, and will open to them new doors of opportunity. The particular problems which women engaged in farming will have to meet, and the special lines of farming in which they will have favorable opportunities, will be considered in a series of conferences.

Women who are interested in taking agricultural courses should correspond with Miss Margaret Hamlin, who acts as vocational counselor for women.

POSITIONS

The College does not guarantee positions to students registered in any of its courses, but it has an opportunity to recommend students for a large number of positions. A record is kept of each student's work and experience, and of his success in positions for which he has been recommended after he has finished his course. Opportunities for trained men and women, especially those who have had farm experience, are good.

A student desiring a recommendation from the college must meet the following conditions:—

- (1) He must be of good character.
- (2) His previous record must be good.
- (3) His work in all courses must be satisfactory.

Students who have not previously had a considerable amount of practical experience cannot, as a rule, be recommended for positions of responsibility. This is especially true of the better positions for which managers or superintendents are wanted.

VOCATIONAL PLACEMENT

The work of locating students for apprentice training is in charge of the supervisor of placement training. Every effort is made to secure satisfactory positions affording the kind of training desired by the student, but the School cannot guarantee to place every student for training when positions are not available. In normal times placement positions are secured for all students who are eligible.

1. Positions are secured that will enable a student to gain practical experience in his particular vocation.

2. A student desiring placement at home may arrange for such assignment if the supervisor approves. As a rule, it will be found better for a student to spend this six months away from home even though he plans to be employed there after finishing the course. This statement is based on the experience of students who have already taken the course.

If credit is to be secured for the six months' placement training the following conditions must be carefully observed:

1. The student must interview the supervisor early in his first year in order that his qualifications, the type of work he wishes to pursue, and his general fitness may be determined.

2. No final arrangement for placement training may be made by the student himself until the supervisor has been consulted.

3. Students are required to complete their period of training without unnecessary absences.

4. No transfers are to be made by a student, if he is to receive credit, until permission has been had from the supervisor.

5. A position may not be given up by the student until the supervisor has been notified.

6. A monthly report must be furnished on the form supplied, and submitted not later than the fifth of each month during his training period.

7. A student whose grade of work is regularly poor (below a 70 rating) in the classes of his major subject will not be eligible for placement training, unless recommended by the department in charge of his major work.

8. When a student fails to complete the requirements of his placement training with a satisfactory grade, he is not allowed to take the work of the second year.

9. All male students are given a thorough physical examination by the Department of Physical Education at the beginning of the college semester. Any disabilities liable to affect the student's placement work are noted, and, if of a serious nature, recommendations for corrective measures are supplied. Parents should understand that most kinds of agricultural work require a well-balanced combination of brawn and brain. No student whose physical condition is questionable will be accepted for placement training without a physician's certificate, and parents' approval.

It should be clearly understood by both employer and employee that the same energy, regularity and general conduct will be expected of the student during his period of placement training as is expected in his work in classes and on the campus.

It should also be noted that this six months' experience is educational in its nature. Students are expected to earn and receive a reasonable wage, but the purpose of the training is the experience gained rather than the wage earned. The scale of wages may vary in different localities, but each man's ability is given very careful thought, that he may obtain a wage that is fair to him. In the event of any misunderstanding the supervisor should be immediately informed.

DESCRIPTION OF COURSES

ANIMAL HUSBANDRY

The Animal Husbandry major fits students to cope with the practical problems of live stock production and management. It supplements and supports but does not duplicate or replace the necessary experience gained only through actual manual work in caring for animals. As a foundation, the study of breed history, live stock trends, animal anatomy and physiology is required. Special attention is given to physiological processes in breeding and feeding. Later courses show how these processes actually function under the stockman's guidance.

A herd of about 200 dairy cattle including Ayrshires, Guernseys, Jerseys, Holsteins and Milking Shorthorns, a band of about a dozen Percheron brood mares, a flock of about 60 Southdown and Shropshire sheep and a herd of about 50 Berkshire and Chester White swine, together with modern barns and equipment for housing and caring for the above live stock, and a farm of several hundred acres used primarily for the production of feed crops, gives ample scope for illustrating and giving practice in modern methods of live stock handling. The farm and barns are our laboratory; the animals and accessories our equipment.

Graduates from the Animal Husbandry major for the most part secure positions as herdsmen or farm managers.

Animal Husbandry

First Year

First Semester

Agricultural Engineering S5 (Farm Engineering)
Animal Husbandry S1 (Types and Breeds)
Bacteriology S1 (Bacteriology and Rural Hygiene)
Business Law S1
Dairy S1 (General Dairying)
Soils and Crops S1 (Soil Management)
Agricultural Opportunities S1 (Required of women students)
*Physical Education S1
Physical Education S3 (Hygiene — required of men students)
Tractor Practice

Electives

Home Economics S1 (Food Selection)
*Physical Education S1 is required of men students not participating in football; also required of women students.

Second Semester

(Eight Weeks Resident Instruction Followed by Six Months Placement Training)
Animal Husbandry S2 (Principles of Feeding)
Bacteriology S2 (Continuation of Bacteriology S1)
English Composition S2
Forestry S2 (The Elements of Forestry)
Fruit Growing S2 (Orchard and Vineyard Pruning)
Soils and Crops S2 (Fertilizers)
Physical Education S2 (Required of women students)
Milking, Harnessing and Teaming

Electives

Physical Education S4 (Basketball and Hockey)

Second Year

First Semester

Agricultural Economics S1 (Farm Economic Problems)
Agricultural Engineering S7 (Farm Structures)
Animal Husbandry S3 (Feeding Practice in Live Stock)
Animal Husbandry S5 (Farm Meats)
Farm Management S1 (Farm Management and Accounts)
Rural Sociology S1 (Social and Economic Problems)
Veterinary Science S1 (Animal Sanitary Science)
Physical Education S5 (Required of men students not participating in football)

Electives

Physical Education S3 (For women)

Second Semester

Agricultural Economics S2 (Marketing)
Agricultural Engineering S2 (Farm Motors)
Animal Husbandry S4 (Live Stock Production and Advanced Judging)
Animal Husbandry S6 (Animal Breeding and Herd-book Study)
Poultry Husbandry S10 (General Course)
Soils and Crops S4 (Field Crops)

Electives

English S4
Physical Education S4
Physical Education S6 (Baseball)

Animal Husbandry S-1. (Types and Breeds) I.

Includes a study of the history and development of the various breeds of cattle, horses, sheep and swine together with a discussion of the conditions to which each breed seems best adapted. Laboratory work consists of judging

and evaluating as many rings of all the classes of farm live stock as time will permit. Textbook: Plumb, "Types and Breeds of Farm Animals."
2 class hours and 1 2-hour laboratory period a week. Credit, 3.

Animal Husbandry S-2. (Principles of Feeding) II.

A study of the fundamental principles of animal nutrition, of the composition of feeding materials and their relative importance for the different classes of farm animals in New England. The latter part of the course is devoted to a study of feeding standards and to the calculation of rations for all classes of farm live stock. Textbook: Henry and Morrison, "Feeds and Feeding."
5 class hours a week. Credit, 5.

Animal Husbandry S-3. (Feeding Practice in Live Stock) I.

A continuation of S-2 showing the application of the principles of nutrition in economic live stock production and including the management and feeding of horses, beef cattle, sheep and swine. Feeding and managerial problems are assigned for outside work followed by ample classroom discussions. Prerequisites: Animal Husbandry S-1 and Animal Husbandry S-2. Textbook: Henry and Morrison, "Feeds and Feeding."
3 class hours a week. Credit, 3.

Animal Husbandry S-4. (Live Stock Production and Advanced Judging) II.

Consideration will be given to matters pertaining to the feeding, fitting for show, and showing, judging and management of dairy cattle particularly, although students may elect to concentrate on other classes of live stock.

There will be talks by specialists, and laboratory work in judging and fitting for show and showing.

Trips will also be taken to purebred live stock farms for the purpose of inspection, and to judge classes of live stock. Saturdays will be reserved for these trips, and it will be required for the student to make at least five trips. The total cost for transportation covering these trips will be approximately \$10.00.

Prerequisites: Animal Husbandry S-1, Animal Husbandry S-2, Animal Husbandry S-3.

2 class hours and 1 2-hour laboratory period a week

Credit, 3

Animal Husbandry S-5. (Farm Meats) I

This course is the complement of the production course previously given and permits the student to follow the product (beef, pork, veal and lamb) through the farm barn and feed lot to its final destination, the consumer's table. Practice is afforded in the killing, cutting and curing of beef, pork, veal and lamb. Included in this course is a trip to several large packing houses in Boston, consuming two days and costing about \$20. Prerequisites: Animal Husbandry S-1, Animal Husbandry S-2, Animal Husbandry S-3. Textbook: Tomhave, "Meat and Meat Products."

2 3-hour laboratory periods a week.

Credit, 3.

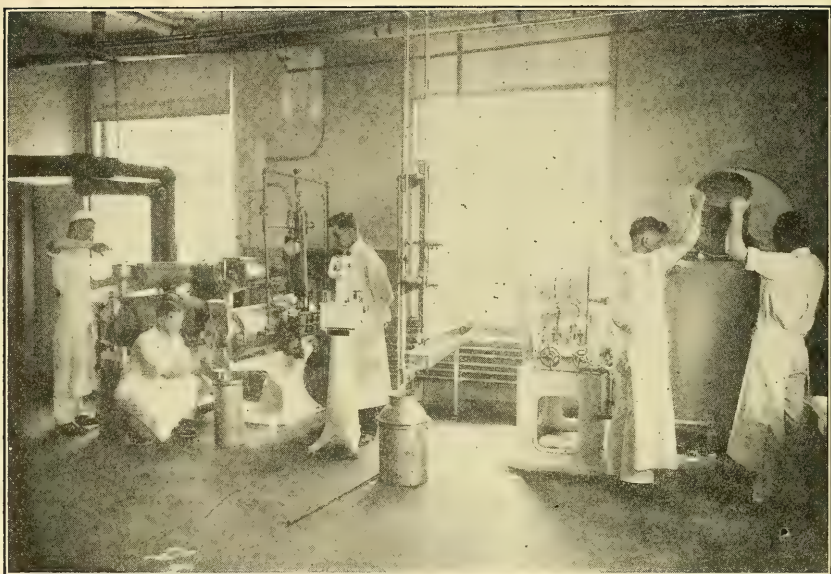
Animal Husbandry S-6. (Animal Breeding and Herdbook Study) II.

Includes a study of the physiology of reproduction and of animal genetics as well as the art of breeding. Among the topics included are the Origin and Domestication of Farm Animals; Modern Theories of Heredity, Variation and Sex Determination; the Systems of Breeding — Cross-, Out-, Line-, and Close-Breeding; and the one paramount problem of animal breeding, namely, Selection. Considerable pedigree work in the student's favorite breed is also included. Prerequisites: Animal Husbandry S-1 and Animal Husbandry S-2. Textbook: Rice, "Breeding and Improvement of Farm Animals."

3 class hours and 1 2-hour laboratory period a week.

Credit, 4.

NOTE: — Every student in this course must qualify in tractor practice, milking, harnessing, and teaming, single and double. Arrangements for practice periods and examinations by special assignment. No student will be put in placement training who has not satisfied these preliminary requirements.



Ice Cream Making



College Guernseys. Farm buildings in background serve as laboratories for Animal Husbandry

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DAIRY MANUFACTURES

The Dairy Manufactures course is designed to fit men for positions with market milk concerns, creameries, ice cream factories, and specialized dairy farms.

All dairy manufacturing courses are given in the dairy building (Flint Laboratory), a modern building designed especially for dairy work. The building is equipped with the newest and best types of dairy and creamery machinery.

The market milk room contains two complete pasteurizing units, a clarifier, separator, milk heater, automatic bottle filler and capper, and other necessary equipment for the proper handling of market milk.

The ice cream making room contains a pasteurizing vat, homogenizer, cooler, brine and direct expansion freezers, filling machines, and additional equipment such as is found in a modern ice cream plant.

The room designed for cheese making is equipped with cheese vats, draining racks, presses, mixer, etc. The butter making room has various types of hand and power churns, workers, scales, and other accessories.

The separator room contains a collection of separators and exhibits of modern equipment and supplies for the dairyman.

The testing laboratories are well equipped with apparatus for the Babcock, Mojonnier, and other tests used for the determination of fat, acidity, and general cleanliness of milk and milk products.

Dairy Manufactures

First Year

First Semester

Agricultural Engineering S1 (Farm Motors)
 Animal Husbandry S1 (Types and Breeds)
 Bacteriology S1 (Bacteriology and Rural Hygiene)
 Business Law S1
 Dairy S1 (General Dairying)
 Soils and Crops S1 (Soil Management)
 Agricultural Opportunities S1 (Required of women students)
 *Physical Education S1
 Physical Education S3 (Hygiene — required of men students)

Electives

Home Economics S1 (Food Selection)
 *Physical Education S1 is required of men students not participating in football; also required of women students.

Second Semester

(Eight Weeks Resident Instruction Followed by Six Months Placement Training)
 Animal Husbandry S2 (Principles of Feeding)
 Bacteriology S2 (Continuation of Bacteriology S1)
 Dairy S2 (Testing Milk Products)
 English Composition S2
 Horticultural Manufactures S4
 Soils and Crops S2 (Fertilizers)
 Physical Education S2 (Required of women students)

Electives

Physical Education S4 (Basketball and Hockey)

Second Year

First Semester

Agricultural Economics S1 (Farm Economic Problems)
 Business Management S3
 Dairy S3 (Butter and Ice Cream Making)
 Rural Sociology S1 (Social and Economic Problems)
 Veterinary Science S1 (Animal Sanitary Science)
 Physical Education S5 (Required of men students not participating in football)

Electives

Physical Education S3 (For women)

Second Semester

Agricultural Economics S2 (Marketing)
 Agricultural Engineering S6 (Dairy Mechanics)
 Bacteriology S4 (Dairy Bacteriology)
 Dairy S4 (Market Milk, Cheese, and Concentrated Milk Products)

Electives

English S4
 Physical Education S4
 Physical Education S6 (Baseball)

Dairy S-1. (General Dairying) I.

This course takes up the question of the importance of dairying in the United States, and especially in the New England States, giving the development of dairying from the earliest to the present time. It covers the secretion, composition, and properties of milk; reasons for variation in the per cent of fat in different samples of milk; the Babcock test for fat in milk and other dairy products; other common milk tests; the advantage of testing herds,

Herd Improvement Associations, advanced registry work; the handling of market milk; soft cheese making, ice cream making, and butter making as applied to general farm conditions. The laboratory work consists in testing milk and dairy products for butter fat, solids, and acidity, together with some dairy plant experience in milk handling, butter making, cheese making, and ice cream making.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

Dairy S-2. (Testing Milk Products) II.

In this course a study is made of the common tests used in dairy manufacturing processes.

The lectures in this course include a discussion of the application of tests, what they indicate and their importance in the dairy plant.

The laboratory work consists of a study of the various dairy laboratory tests such as sediment, flavor, and total solids of milk; moisture fat and salt determination in butter; moisture test of cheese; the operation of the Mojonnier tester and the modified Babcock tests for fat in dairy products.

In addition to the testing work students will be required to arrange for work about the plant in order to become familiar with dairy plant practices and the operation of dairy machinery.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.

Dairy S-3. (Butter and Ice Cream Making) I.

This course deals with butter making and ice cream making. In that part of the course on butter making, the principal factors studied are: methods of separating milk, the history, selection, care and use of separators; the pasteurization and ripening of cream; testing cream for acidity; the making and use of starters; a study of churns and churning; modern methods of making butter; marketing butter; tests for moisture, salt, fat, and curd content of butter.

In that part of the course on ice cream making, a careful study is made of modern methods of manufacturing the common frozen dairy products (ice cream, sherbets, and ices, also frozen puddings, punches, mousses, etc.).

The lecture work includes a discussion of the history of ice cream making, the ingredients found in ice cream, methods of preparing and standardizing mixes, the freezing process, methods of hardening, marketing, and distribution of the finished product.

The laboratory work involves the preparation and standardization of ice cream mixes, the freezing of ice cream and other frozen dairy products, and laboratory tests for butter fat and total solids in ice cream.

3 class hours and 3 3-hour laboratory periods a week.

Credit, 8.

Dairy S-4. (Market Milk, Cheese, and Other Milk Products) II.

In this course the different types of cheese are studied. In lectures and laboratory practice the manufacture of hard and soft cheese (cheddar, olive, nut, neufchatel, cream, cottage, etc.) is considered either from the standpoint of marketing the entire milk supply of the dairy through these products or of the economic disposal of surplus milk.

Lectures are given covering the manufacture of the various concentrated products as sweetened condensed, evaporated, and powdered milk.

Under market milk, a study of the development of the market milk industry is made. Attention is given to the necessary essentials in producing a high grade milk; the economics of milk production; food value and uses; the advantages of cooperative milk producers' organizations; the various methods of marketing milk; the transportation, processing and delivery of milk; manufacture and marketing of surplus milk in the form of by-products as cream, cultured buttermilk, chocolate milk, etc.

The laboratory work consists of receiving and making quality tests on milk and the operation of the machinery used in processing market milk. In addition, trips to dairy farms and a one-day trip, with estimated cost of \$5.00, will be made to city milk plants.

3 class hours and 3 3-hour laboratory periods a week.

Credit, 8.



Greenhouse Work



Field Study of Tillage Implements

Dairy S-6. (General Course for Poultry Majors) II.

This course takes up the importance of dairying in the United States, and especially in the New England states.

Lectures will be given on secretion, composition, and properties of milk, reasons for variation in per cent of butter fat in different samples of milk. The Babcock test for fat in milk, cream, skim milk and buttermilk, the advantages of testing herds, herd improvement associations, advanced registry work; the handling of market milk, soft cheese making, ice cream making, and butter making, as applied to general farm conditions.

The laboratory work consists mainly in testing milk and dairy products for butter fat, solids, and acidity, together with some laboratory work in milk handling, butter making, cheese making, and ice cream making.
2 class hours and 2 2-hour laboratory periods a week. Credit, 4.

POULTRY HUSBANDRY

Seven courses are offered by this department. One is a general course designed particularly to equip the student with fundamental principles underlying successful poultry raising as related especially to the farm flock. The other six courses are for the student who desires to specialize in poultry culture.

There is a broad field of opportunity for adequately trained men in the commercial handling and sale of poultry and poultry products, specialists in incubation, brooding and rearing, and assistants or managers of commercial poultry farms. Good profits and wages await well-equipped men and women in these and other branches of poultry work.

This department is well-equipped to offer practical instruction in poultry husbandry. Our quarters and equipment in Stockbridge Hall provide ample facilities for efficient classroom and laboratory teaching.

Our practical laboratory (college poultry plant) comprises about 1,500 adult birds, divided into some 40 pens of various designs, the flocks ranging in size from 10 to 250 birds; several lamp incubators, as well as five mammoth machines; brooding and rearing facilities for 5,000 chicks, including many styles of coal and electric brooders and chick batteries, also two types of cages for laying hens; facilities for practice in feeding, fattening, killing, picking, caponizing, judging, mixing rations; construction of poultry houses and appliances, etc.

In addition to the actual practice work performed, the student has an opportunity to keep under observation practical experiments and demonstrations continually under way for the instruction of students and practical poultry keepers.

Poultry Husbandry**First Year****First Semester**

Bacteriology S1 (Bacteriology and Rural Hygiene)
Business Law S1
Poultry Husbandry S1 (Judging and Housing)
Poultry Husbandry S3 (Feeding)
Soils and Crops S1 (Soil Management)
Agricultural Opportunities S1 (Required of women students)
*Physical Education S1
Physical Education S3 (Hygiene — required of men students)
Tractor Practice

Electives

Home Economics S1 (Food Selection)
*Physical Education S1 is required of men students not participating in football; also required of women students

Second Semester

(Eight Weeks Resident Instruction Followed by Six Months Placement Training)
Dairy S6 (General Course)
English Composition S2
Poultry Husbandry S2 (Incubation and Brooding)
Physical Education S2 (Required of women students)
Milking, Harnessing and Teaming

Electives

Physical Education S4 (Basketball and Hockey)

21
Second Year

First Semester

Agricultural Economics S1 (Farm Economic Problems)
Agricultural Engineering S3 (Farm Shop)
Fruit Growing S9 (General Course)
Poultry Husbandry S5 (Marketing and Disease Control)
Poultry Husbandry S7 (Breeding)
Veterinary Science S1 (Animal Sanitary Science)
Physical Education S5 (Required of men students not participating in football)

Electives

Physical Education S3 (For women)

Second Semester

Agricultural Economics S2 (Marketing)
Agricultural Engineering S2 (Farm Motors)
Agricultural Engineering S8 (Farm Structures)
Farm Management S2 (Farm Management and Accounts)
Poultry Husbandry S8 (Management and Specialties)
Rural Sociology S4 (Social and Economic Problems)

Electives

English S4
Physical Education S4
Physical Education S6 (Baseball)

Poultry Husbandry S-1. (Judging and Housing) I.

This course embraces a study of the various economically important types and breeds of domestic fowl, judging for egg production capacity, and for exhibition quality. A visit to Storrs egg laying contest is required. This course also covers the principles and practices of constructing and equipping houses on a commercial poultry farm. Two hours for judging; two hours for housing.

2 class hours and 2 2-hour laboratory periods a week.

Credit, 4.

Poultry Husbandry S-2. (Incubating and Brooding) II.

A study of incubation and brooding is made by means of the operation of standard incubators and brooders and through a consideration of basic principles. Students select and grade hatching eggs and operate small and mammoth incubators for a period of time. Under supervision each student has charge of a brood of chicks.

3 class hours and the equivalent of 3 2-hour laboratory periods a week.

Credit, 6.

Poultry Husbandry S-3. (Feeding) I.

A study of the common poultry feeds, feeding principles and successful commercial farm practices. Suitable rations for specific purposes are calculated.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

Poultry Husbandry S-5. (Marketing and Disease Control) I.

This course covers candling and grading eggs, market classification of poultry and eggs, judging eggs, fattening, killing, picking, drawing and judging of live and dressed market poultry. This course also aims to acquaint the student with the normal hygienic conditions under which our domestic poultry thrive best. Sufficient anatomy and physiology will be given to enable the student to distinguish between normal and abnormal conditions. The nature of disinfectants and external and internal antiseptics will be stressed, and the students made acquainted with the best usages both scientific and practical in conducting a sanitary program for disease prevention and control. A special effort will be made to link the sanitary, hygienic, and disease control problems with the so-called down-to-date practices in feeding, housing and general management. Two hours for marketing; two hours for disease control.

2 class hours and 2 2-hour laboratory periods a week.

Credit, 4.

Poultry Husbandry S-7. (Breeding) I.

This course includes the study of the improvement of poultry by means of mass selection, "seed-plot" and pedigree methods of breeding. Students follow through each step of a pedigree hatch and assist in the selection of the breeders used at the college plant. Basic principles of heredity necessary for an understanding of good breeding practices are studied. A visit to Genetics Laboratory at Storrs, Connecticut, is required.

3 class hours and 1 2-hour laboratory period a week.

Credit, 4.

Poultry Husbandry S-8. (Management and Specialties) II.

In this course the following points are given special attention: lines upon which a well-organized poultry farm is developed, the general arrangement of plots and buildings, record keeping, accounting and advertising, and a study of surveys. A trip covering three or more days will be made to representative successful poultry farms. The expense per student is approximately \$15-\$20. This is required of each student taking the course for credit. One hour's credit will be devoted to the specialties, such as turkeys, ducks, etc.

3 class hours and the equivalent of 1 2-hour laboratory period a week.

Credit, 4.

Poultry Husbandry S-10. (General Poultry Husbandry) II.

Poultry keeping as a national industry; its importance and geographical distribution; opportunities and possibilities in poultry culture in Massachusetts; principles of feeding; utility classification of fowl; incubation; the production of hatching eggs; the baby chick industry; and brooding and rearing. Practical exercises will be closely correlated with the study of breeds and varieties, various types of incubators, brooders, brooder-houses, etc. "Practical Poultry Management" by Rice and Botsford will be used as a text.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

NOTE. — Students who take course 10 must get permission from the Poultry Department to take advanced poultry courses.

NOTE. — Every student in this course must qualify in tractor practice, milking, harnessing, and teaming, single and double. Arrangements for practice periods and examinations by special assignment. No student will be put in placement training who has not satisfied these preliminary requirements.

FLORICULTURE

Students who complete the course in Floriculture are fitted primarily for work in commercial and private estate greenhouse establishments and retail flower stores. After gaining experience such students may be able to start in business for themselves. With the courses in general horticulture they should also be qualified for positions on private estates, in parks, or in nurseries.

The offices and class rooms of the Department of Floriculture are located in French Hall. Of the two lecture rooms, one will accommodate 40 students, the other 90 students; a laboratory, equipped with slate-covered tables, will accommodate 40 students. In the basement of the building the department has a specially prepared room for bulb storage, a fertilizer and tool room, and a large room for general storage purposes.

The glass area of the department consists of approximately 20,000 square feet, divided as follows: French Hall, range of 7,200 square feet, a durable, practical commercial range, composed of palm and fern, sweet pea, carnation, rose and students' houses; the old Durfee range of 7,400 square feet, devoted to the growing of decorative, conservatory and bedding plants and chrysanthemums; one house of 3,200 square feet suitable for propagating work and general plant culture; and approximately 2,200 square feet in cold frames and hotbeds.

In addition, the department has land for summer culture of carnations, gladioli, dahlias, annuals and bedding plants; a perennial garden, an iris garden, and a rose garden.

23 Floriculture

First Year

First Semester

Business Law S1
 Floriculture S1 (Garden Materials)
 Floriculture S3 (Greenhouse Construction and Heating)
 Horticulture S1 (Plant Materials)
 Soils and Crops S1 (Soil Management)
 Vegetable Gardening S1 (Principles of Vegetable Culture)
 Agricultural Opportunities S1 (Required of women students)
 *Physical Education S1
 Physical Education S3 (Hygiene — required of men students)
 Tractor Practice

Electives

Home Economics S1 (Food Selection)
 *Physical Education S1 is required of men students not participating in football; also required of women students.

Second Semester

(Eight Weeks Resident Instruction Followed by Six Months Placement Training)
 English Composition S2
 Entomology S2 (Insects of Ornamental Trees and Shrubs)
 Floriculture S2 (Greenhouse Management and Propagation)
 Forestry S2 (The Elements of Forestry)
 Horticulture S2 (Propagation of Plant Materials)
 Soils and Crops S2 (Fertilizers)
 Vegetable Gardening S2 (Principles of Vegetable Culture)
 Physical Education S2 (Required of women students)
 Teaming and Harnessing

Electives

Physical Education S4 (Basketball and Hockey)

Second Year

First Semester

Agricultural Engineering S3 (Farm Shop)
 Business Management S1 (Fundamentals of Business Management)
 Floriculture S5 (Commercial Production)
 Floriculture S7 (Flower Arrangement)
 Fruit Growing S9 (General Course)
 Soils and Crops S9 (Park and Estate Maintenance)
 Physical Education S5 (Required of men students not participating in football)

Electives

Physical Education S3 (For women)

Second Semester

Floriculture S6. (Commercial Production)
 Floriculture S8 (The Uses of Herbaceous Plants)
 Floriculture S10 (Conservatory Plants)
 Horticulture S8 (Care of Plant Materials)
 Vegetable Gardening S4 (Vegetable Forcing)

Electives

English S4
 Physical Education S4
 Physical Education S6 (Baseball)

Floriculture S-1. (Garden Materials) I.

This course is intended for students who will take up private estate work or who will specialize in floriculture. It will include a study of the annuals, biennials, herbaceous perennials, and bedding plants which are commonly used in commercial floriculture and in private estate work. Methods of propagation, culture and uses will be considered. Laboratory exercises will include work in propagation, planting, study of materials, and planning of beds and borders.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

Floriculture S-2. (Greenhouse Management and Propagation) II.

A study of the principles of greenhouse management including the consideration of soils, fertilizers, watering, ventilation, temperature regulation, insect and disease control. The methods of propagation of florists' crops will be taken up in detail.

3 class hours and 1 2-hour laboratory period a week.

Credit, 4.

Floriculture S-3. (Greenhouse Construction and Heating) I.

This course will take up the origin, growth, and importance of the floriculture industry, development of the greenhouse, types of houses and construction, and methods of greenhouse heating. Trips are taken to visit greenhouse establishments in the vicinity of Amherst at a total approximate cost of two dollars.

1 class hour and 1 2-hour laboratory period a week.

Credit, 2.

Floriculture S-5. (Commercial Production) I.

Courses S-5 and S-6 will be devoted to a consideration of the important commercial crops. Special attention will be given to the culture (under glass) of roses, carnations, chrysanthemums, violets, and sweet peas. Other

cutflower crops and various potted plants will also be considered. All members of the class are required to take a one-day trip to visit a large commercial greenhouse establishment at an approximate cost of five dollars each. Textbooks required during the two courses will be: Holmes, "Commercial Rose Culture;" and Smith, "Chrysanthemum Manual." 2 class hours and 1 2-hour laboratory period a week. Credit, 3.

Floriculture S-6. (Commercial Production) II.

A continuation of Floriculture S-5.
2 class hours and 1 2-hour laboratory period a week. Credit, 3.

Floriculture S-7. (Flower Arrangement) I

A study of the principles underlying the use of flowers in funeral designs and sprays, table decorations, corsages, vase, bowl and basket arrangements; decorations for public functions; study of color with regard to such work. Limited to students who are majoring in floriculture. Textbooks: White, "Principles of Flower Arrangement;" Harry, "Manual of Floral Designing."

1 class hour and 2 2-hour laboratory periods a week. Credit, 3.

Floriculture S-8. (The Uses of Herbaceous Plants) II.

This course is a continuation of Floriculture S-1 and is intended for students specializing in floriculture and general horticulture. It provides opportunity for a more detailed study of many of the plants considered in the preceding course with special emphasis on their uses in gardens and in other types of landscape planting. Lectures, assigned readings, study and identification of plants, planning of borders and gardens. All members of the class are required to take a one-day trip to visit nurseries and perennial gardens at an approximate cost of five dollars each.

2 class hours and 1 4-hour laboratory period a week. Credit, 4.

Floriculture S-10. (Conservatory Plants) II.

A study of the plants, both foliage and flowering, which are used in conservatories and in decorative work. Methods of propagation, culture, uses and identification of plants will be included in the course. Trips are taken to visit the conservatories at Smith and Mount Holyoke colleges at slight expense.

1 class hour and 1 2-hour laboratory period a week. Credit, 2.

NOTE: — Every student must qualify in tractor practice; and in harnessing and teaming, single and double. Arrangements for practice periods and examinations by special assignment. No student will be put on placement training who has not satisfied these preliminary requirements.

FRUIT GROWING

This course is arranged to give the student a sound practical knowledge of fruit growing and allied subjects. Graduates who are capable and experienced have advanced rapidly to positions of responsibility in some of the larger orchards of New England, and the demand is active for good men in that field.

Some graduates of this course have gone into business for themselves, establishing successful orchards of their own, or pruning, spraying and otherwise caring for a number of small orchards, the owners of which are not prepared to do their own work. Still others are packing house foremen or are engaged in some other marketing activity. The fruit-growing industry of New England is developing rapidly and the opportunities are excellent for good men who are well trained.

Practical work in the orchards under expert supervision is emphasized where possible. It is intended to familiarize students with the best methods that have been devised by experiment stations and leading fruit growers for the production and marketing of high quality fruits under New England conditions. The Department of Pomology has about fifty acres of fruits easily accessible from the classroom, and the orchards are used freely for purposes of instruction. All the common tree fruits and small fruits are grown



Pruning Raspberries



Learning to Spray

here on a commercial scale. Many experiments and demonstrations are in progress in the plantations, offering an exceptional opportunity to the student.

The Department also has a thoroughly up-to-date storage and packing house, in which are several types of refrigerated and common storage rooms, fruit sizing machines, and other modern equipment of all the principal types.

A good equipment is maintained of the principal types of orchard tools and machines, including sprayers, plows, harrows, cultivators, tractor, pruning saws, shears, etc., for studying and trial by students.

Fruit Growing

First Year

First Semester

Business Law S1
English Composition S1
Fruit Growing S1 (Growing Tree Fruits)
Fruit Growing S3 (Varieties)
Soils and Crops S1 (Soil Management)
Vegetable Gardening S1 (Principles of Vegetable Culture)
Agricultural Opportunities S1 (Required of women students)
*Physical Education S1
Physical Education S3 (Hygiene — required of men students)
Tractor Practice

Electives

Home Economics S1 (Food Selection)
*Physical Education S1 is required of men students not participating in football; also required of women students.

Second Semester

(Eight Weeks Resident Instruction Followed by Six Months Placement Training)
Agricultural Engineering S2 (Farm Motors)
Agricultural Engineering S8 (Farm Structures)
Agricultural Engineering S10 (Repair of Farm Equipment)
Fruit Growing S2 (Orchard and Vineyard Pruning)
Rural Sociology S2 (Social and Economic Problems)
Soils and Crops S2 (Fertilizers)
Physical Education S2 (Required of women students)
Teaming and Harnessing

Electives

Physical Education S4 (Basketball and Hockey)

Second Year

First Semester

Agricultural Economics S1 (Farm Economic Problems)
Beekeeping S1 (Fall Management, Wintering and Honey)
Dairy S1 (General Dairying)
OR
Floriculture S1 (Garden Materials)
Forestry S3 (Estate Forestry and Woodland Management)
Fruit Growing S5 (Harvesting, Packing, Storage and Marketing)
Fruit Growing S7 (Small Fruits)
Horticultural Manufactures S1
Physical Education S5 (Required of men students not participating in football)

Electives

Physical Education S3 (For women)

Second Semester

Agricultural Economics S2 (Marketing)
Beekeeping S2 (Spring Management, Pollination and Honey Production)
Farm Management S2 (Farm Management and Accounts)
Fruit Growing S4 (Fruit Pests and Spraying)
Fruit Growing S6 (Problems in Orchard Management)
Horticultural Manufactures S2
OR
Poultry S10 (General Course)
Vegetable Gardening S8 (Commercial Vegetable Culture)

Electives

English S4
Physical Education S4
Physical Education S6 (Baseball)

Fruit Growing S-1. (Growing Tree Fruits) I.

This course covers the field of orchard planting and development, and the management of bearing plantations to produce fruit of high quality. Sites and soils for plantations of apples, pears, peaches, plums, and cherries are discussed along with the best methods of setting trees to insure a good start. The handling of young trees to bring them into early profitable bearing is given special attention.

The culture of bearing orchards is studied in detail to give an understanding of the factors that influence yield and quality of fruit. Methods of soil management are discussed with reference to their advantages and limitations. The experimental plots afford exceptional opportunities to study cultural methods and many subjects are discussed in the orchards. 3 class hours a week.

Credit, 3.

Fruit Growing S-2. (Orchard and Vineyard Pruning) II.

Fruit plantations may be damaged more by unintelligent pruning than

by mismanagement in any other single operation. If the orchardist does not know that apple trees bear on spurs, he is likely to cut them off in pruning, and so reduce his chances for a crop. If he is ignorant of the fact that the peach bears on last year's wood, he may remove most of this wood, and incidentally most of his crop. This course aims to give the student a thorough training in the theory of pruning and the methods of bearing of the different fruits.

At the same time, every student is required to prune in the college orchards and vineyards until he becomes reasonably proficient with each kind of fruit. 1 class hour and 2 2-hour laboratory periods a week. Credit, 3.

Fruit Growing S-3. (Varieties) I.

It is the aim of this course to acquaint the student with the more important varieties of our common fruits, and their value in the commercial orchard. The selection of fruit for exhibition and the judging of the same will also be taken up.

2 2-hour laboratory periods a week.

Credit, 2.

Fruit Growing S-4. (Fruit Pests and Spraying) II.

Before spraying can be done intelligently, the fruit grower must have an understanding of the life histories of the principal pests for which the spraying is done. This course deals with the development of insect and disease pests, and particular attention is given to the vulnerable points in their life cycles at which control measures are directed.

This course also deals with many of the principal spray materials and each student is given practice in their preparation for use and application in the orchard.

The department is well equipped with modern spraying apparatus, from bucket pumps to large power outfits, and students are required to study the construction of these pumps and to operate them in the orchards.

Spraying is very properly regarded as one of the most important operations in connection with growing fruit, and it is the aim of this course to train students to recognize the work of our common orchard pests; to prepare the proper materials for their control, and to apply them efficiently. 2 class hours and 1 2-hour laboratory period a week. Credit, 3.

Fruit Growing S-5. (Harvesting, Packing, Storage, and Marketing) I.

Profitable returns from a well grown crop depends largely upon the manner of handling that crop from the time it leaves the trees until it reaches the market.

This course considers the methods of harvesting which will insure the maximum storage quality of the fruit. Particular attention is given to the grading of the crop and subsequent packing into the various packages that are commonly used for conveying the fruit to market.

The principles of common and refrigerated storage are considered in detail, and storage house construction under New England conditions is discussed, with a critical examination of several storages in use on or near the campus.

Marketing methods as related to the shipping of fruit to distant markets as well as those employed in the development of local markets are given special consideration in this course.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

Fruit Growing S-6. (Problems in Orchard Management) II.

This course provides an opportunity to focus placement training experiences and information acquired in previous courses on the major problems of the New England fruit grower. It is the aim of the course to familiarize the student with conditions under which fruit must be grown here, with current thought on the more important recent developments, and with the sweeping adjustments which are being made in the fruit industry of the Northeastern States.

Each major student must be prepared to take a trip to one of the promi-

nent fruit sections at a cost of \$15.00 to \$25.00.

3 class hours a week.

Credit, 3.

Fruit Growing S-7. (Small Fruits) I.

While orcharding will always be the leading phase of fruit growing in Massachusetts, there are many unusual opportunities for success in growing the various small fruits. This course deals with problems of establishing and handling successfully, plantations of strawberries, raspberries, blackberries, currants, and grapes.

The college has large plantations of most of these fruits, so the student has ample opportunity for a wide range of practical work. The aim is to make the course of the utmost practical value, as well as to give the scientific principles on which practices are based.

2 class hours a week.

Credit, 2.

Fruit Growing S-9 and S-10. (General Course) I. II.

This course is intended to meet the needs of students in other majors who cannot devote more than one term to the subject of Fruit Growing. It deals with the practical side of growing and marketing fruits. Special attention is given to such questions as selection of sites, choice of varieties, grafting, spraying, pruning, soil management, harvesting, packing and marketing.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

NOTE: — Every student must qualify in tractor practice; and in harnessing and teaming, single and double. Arrangements for practice periods and examinations by special assignment. No student will be put on placement training who has not satisfied these preliminary requirements.

GENERAL HORTICULTURE

The constantly increasing interest in development of grounds, both public and private, for use and enjoyment, has created a demand for men trained to handle the varied problems in the construction and maintenance of these grounds. The course in General Horticulture aims to make the student familiar with these various problems.

Men who have taken this course are to be found in such different fields as foremen in nurseries, or proprietors of nurseries which they themselves have built up; superintendents on private estates, cemeteries, parks, and various public and private institution grounds; foremen for landscape construction firms, and some have developed their own business in landscape construction and grounds maintenance service. There are a large number located as superintendents of golf courses, or greenkeepers. So great has been the demand for this particular branch of the work, an option of special courses has been arranged for men who are looking forward definitely to this field of activity.

With the whole campus as a laboratory, the student finds problems about him every day comparable to those he will meet when he goes out to work. The broad lawns, the walks and drives, the gardens, the greenhouses, the orchards, the vegetable plots, as well as the farms, supply all the various phases of work which will be encountered on estates, in parks, or in institution grounds. As far as practicable the student is given the opportunity to determine what these problems are and to solve them himself under expert supervision.

On the campus is to be found a large and excellent collection of mature trees, shrubs, and vines. From these plants the student is able to build up a background of plant knowledge; an identification, which is carried on in a special greenhouse for the purpose; in the handling of plants in various stages of their growth, in the nursery and on the campus; and in their ultimate care, pruning and protection against injuries of all kinds. Construction of roads, walks, drainage and other problems involving the moving of earth are especially valuable to those looking forward to landscape construction.

The courses in forestry are designed to give practical instruction in the elements of silviculture, forest improvement, and problems of measurement suitable for students who will be called upon to act as conservators of forested areas and wild life. This work is carried on in the demonstration forest on Mt. Toby, a few miles from the campus.

Offices and class room are located in Wilder Hall.

Horticulture

First Year

First Semester

Business Law S1
 Floriculture S1 (Garden Materials)
 Horticulture S1 (Plant Materials)
 Soils and Crops S1 (Soil Management)
 Soils and Crops S5 (Construction and Maintenance of Fine Turf Areas)
 Vegetable Gardening S1 (Principles of Vegetable Culture)
 Agricultural Opportunities S1 (Required of women students)
 *Physical Education S1
 Physical Education S3 (Hygiene—required of men students)
 Tractor Practice

Electives

Home Economics S1 (Food Selection)
 *Physical Education S1 is required of men students not participating in football; also required of women students.

Second Semester

(Eight Weeks Resident Instruction Followed by Six Months Placement Training)
 Botany S2 (Diseases of Trees and Shrubs)
 Entomology S2 (Insects of Ornamental Trees and Shrubs)
 Forestry S2 (The Elements of Forestry)
 Horticulture S2 (Propagation of Plant Materials)
 Rural Sociology S2 (Social and Economic Problems)
 Soils and Crops S2 (Fertilizers)
 Vegetable Gardening S2 (Principles of Vegetable Culture)
 Physical Education S2 (Required of women students)
 Teaming and Harnessing

Electives

Physical Education S4 (Basketball and Hockey)

Second Year

First Semester

Agricultural Engineering S3 (Farm Shop)
 English Composition S1
 Forestry S3 (Estate Forestry and Woodland Management)
 Fruit Growing S9 (General Course)
 Horticulture S3 (Principles of Plane Surveying and Mapping)
 Soils and Crops S9 (Park and Estate Management)
 Physical Education S5 (Required of men students not participating in football)

Electives

Physical Education S3 (For women)

Second Semester

Agricultural Engineering S2 (Farm Motors)
 Floriculture S8 (The Uses of Herbaceous Plants)
 Horticulture S4 (Plan Making and Surveying)
 Horticulture S6 (Plant Materials)
 Horticulture S8 (Care of Plant Materials)

Electives

English S4
 Physical Education S4
 Physical Education S6 (Baseball)

Golf Course Maintenance Majors

Second Year

First Semester (October–December)

Agricultural Engineering S3 (Farm Shop)
 English Composition S1
 Forestry S3 (Estate Forestry and Woodland Management)
 Horticulture S3 (Principles of Plane Surveying and Mapping)
 Soils and Crops S7 (Golf Course Maintenance)
 Soils and Crops S9 (Park and Estate Management)
 Physical Education S5 (Required of men students not participating in football)

NOTE:—Golf course maintenance majors will carry the above schedule until the Christmas vacation, and if they have obtained a creditable grade (75 or more) at that time, they may enter the Winter School for Greenkeepers. If not, they lose their eligibility for the Greenkeepers Course and must continue with the scheduled courses to the end of the semester.

Second Semester (March–June)

Botany S4 (Turf Plant Diseases)
 Entomology (Turf Insects)
 Field Problems (Involving experiments and intensive study)
 Interpretation of Professional and Scientific Articles
 NOTE:—At the close of the Winter School for Greenkeepers, or after the spring vacation the students will undertake problem work to be arranged so as to require time and effort enough to complete 18 credits for the period from spring vacation until graduation.

Majors in Golf Course Maintenance take the following program with the Winter School for Greenkeepers from January to March: (1) Landscape Appreciation, (2) Botany, (3) Water Systems, (4) Drainage, (5) Equipment, (6) Managerial Problems, (7) Grasses and Grass Seeds, (8) Cost Keeping and Analysis, (9) Soils and Fertilizers, and (10) Forum.

Horticulture S-1. (Plant Materials) I.

Study of evergreen and deciduous trees, their distinguishing characters,

value in landscape work and culture, with special reference to nursery and planting practice.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.

Horticulture S-2. (Propagation of Plant Materials) II.

This course will present the principles of plant propagation with special reference to their application to plant materials in nursery practice.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

Horticulture S-3. (Principles of Plane Surveying and Mapping) I.

This course consists of outdoor practice in the use of simple surveying instruments as tapes, compasses, and levels used in the measurement of land surfaces. Practice will be given in elementary drafting and in the study of contour maps, grading plans, house lots and garden problems.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.

Horticulture S-4. (Plan Making and Surveying) II.

This is a continuation of Horticulture S3 including the staking out of areas from plans, grading work, and simple garden construction problems.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.

Horticulture S-6. (Plant Materials) II.

A continuation of Horticulture S1, studying shrubs and woody vines used in ornamental plantings.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.

Horticulture S-8. (Care of Plant Materials) II.

This course deals with the care of woody ornamental plants under the following heads: planting, pruning, maintenance of soil fertility, winter protection, and pest control.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

Soils and Crops S-5. (Construction and Maintenance of Fine Turf Areas) I.

At the completion of this course the student should have a knowledge and appreciation of the requirements for the growing of lawns and sports turf. He will have considered the construction of turf areas; seed identification, selection and sowing; the identification of turf grasses and their soil and fertilizer preferences, correct cultural practices, turf diseases and pests and their control.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.

Soils and Crops S-7. (Golf Course Maintenance) I.

This course is open only to those students who give their major consideration to golf course maintenance, and is a preparatory course for the Winter School for Greenkeepers which is required of students taking this course.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.

Soils and Crops S-9. (Park and Estate Management) I.

A course bringing together those important factors for successful estate and park superintendents that cannot be taught in more specific courses. It includes the making of reports; the keeping and analysis of cost records; direction and distribution of labor, and similar topics, the study of which should cause the student to be informed concerning the managerial problems of a professional park or estate manager.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

Excursion. — For Horticulture S-6, a two-day field trip will be required. Estimated cost, \$10.00.

NOTE: — Every student must qualify in tractor practice; and in harnessing and teaming, single and double. Arrangements for practice periods and examinations by special assignment. No student will be put on placement training who has not satisfied these preliminary requirements.

VEGETABLE GARDENING

Students who complete the course in Vegetable Gardening are fitted to go into commercial work as greenhouse vegetable growers, market gardeners, truck farmers and seed growers. Responsible positions are also open as gardeners on private estates, state and private institutions, as assistants with seed concerns and with retail and wholesale marketing companies.

The vegetable industry is an important vocation in New England and the opportunities are excellent in the various phases of the business for good men or women who are well trained. The Department of Vegetable Gardening is well equipped to give thorough training in that ample class and laboratory rooms are available plus 3,500 square feet of modern greenhouse space and approximately 500 linear feet of hot and cold frames. More than 10 acres of land is also utilized in the production of vegetable crops on a commercial and demonstrational basis including a variety trial plot in which more than 1,000 varieties are grown annually. Equipment of the most modern type is maintained for study and use. The office, class and laboratory rooms are located in French Hall.

Vegetable Gardening

First Year

First Semester

Agricultural Engineering S1 (Farm Motors)
 Floriculture S1 (Garden Materials)
 Floriculture S3 (Greenhouse Construction and Heating)
 Fruit Growing S1 (Growing Tree Fruits)
 Soils and Crops S1 (Soil Management)
 Vegetable Gardening S1 (Principles of Vegetable Culture)
 Agricultural Opportunities S1 (Required of women students)
 *Physical Education S1
 Physical Education S3 (Hygiene — required of men students)
 Tractor Practice

Electives

Home Economics S1 (Food Selection)
 *Physical Education S1 is required of men students not participating in football; also required of women students.

Second Semester

(Eight Weeks Resident Instruction Followed by Six Months Placement Training)
 English Composition S2
 Floriculture S2 (Greenhouse Management and Propagation)
 Fruit Growing S2 (Orchard and Vineyard Pruning)
 Soils and Crops S2 (Fertilizers)
 Vegetable Gardening S2 (Principles of Vegetable Culture)
 Vegetable Gardening S6 (Diseases, Insects and Their Control)
 Physical Education S2 (Required of women students)
 Teaming and Harnessing

Electives

Physical Education S4 (Basketball and Hockey)

Second Year

First Semester

Agricultural Engineering S9 (Drainage and Farm Structures)
 Beekeeping S1 (Fall Management, Wintering, and Honey)
 Business Law S1
 Fruit Growing S7 (Small Fruits)
 Horticultural Manufactures S1
 Vegetable Gardening S3 (Systematic Vegetable Gardening)
 Physical Education S5 (Required of men students not participating in football)

Electives

Physical Education S3 (For women)

Second Semester

Agricultural Economics S2 (Marketing)
 Beekeeping S2 (Spring Management, Pollination, and Honey Production)
 Farm Management S2 (Farm Management and Accounts)
 Fruit Growing S4 (Fruit Pests and Spraying)
 Horticultural Manufactures S2
 OR
 Poultry S10 (General Course)
 Vegetable Gardening S4 (Vegetable Forcing)
 Vegetable Gardening S8 (Commercial Vegetable Culture)

Electives

English S4
 Physical Education S4
 Physical Education S6 (Baseball)

Vegetable Gardening S-1. (Principles of Vegetable Culture) I.

Lecture periods are devoted to discussions covering certain fundamental principles of plant structure and growth as they influence and regulate commercial vegetable culture. The work in the laboratory includes detailed studies in seedage, plant growing, manures and fertilizers, garden planting, pests, storage and marketing.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

Vegetable Gardening S-2. (Principles of Vegetable Culture) II.

Lectures are devoted to discussion of the more important factors of soil and climate which regulate plant growth and reproduction. The laboratory studies are planned in such a manner that the factors discussed in lecture are definitely applied to specific vegetable or horticultural crop plants.

3 class hours and 1 2-hour laboratory period a week.

Credit, 4.

Vegetable Gardening S-3. (Systematic Vegetable Gardening) I.

This course is designed to acquaint the student with the identification, nomenclature and classification of the standard types and varieties of vegetables; judging and exhibiting; seed production and variety improvement work.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.

Vegetable Gardening S-4. (Vegetable Forcing) II.

A study of (1) the geographical distribution of the greenhouse industry and the part this phase of vegetable production plays in supplying our markets with fresh vegetables, (2) the principles of culture, harvesting and marketing of those vegetables commonly grown as commercial crops under glass, (3) growing early plants in frames and plant houses for home and retail purposes.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

Vegetable Gardening S-6. (Diseases, Insects and Their Control) II.

This course is intended to give those students majoring in vegetable gardening an understanding of the more common insects and diseases which attack vegetable plants and the most satisfactory methods for controlling these pests.

2 class hours and 2 2-hour laboratory periods a week.

Credit, 4.

Vegetable Gardening S-8. (Commercial Vegetable Culture) II.

Commercial problems and practices are studied in detail including seedage, planting, tools and machinery, nutrition, harvesting, marketing and management. Organized trips to market gardening sections are required covering a period of approximately three days and costing the individual student about fifteen dollars.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

NOTE — Every student must qualify in tractor practice; and in harnessing and teaming, single and double. Arrangements for practice periods and examinations by special assignment. No student will be put on placement training who has not satisfied these preliminary requirements.

RELATED SUBJECTS IN OTHER DEPARTMENTS

Farm Economics and Marketing

Instruction in agricultural economics is given with a view toward presenting the business side, or economics of agriculture. The required course is divided into two parts given in separate semesters. The approximate division of subject matter for each semester is indicated below.

Agricultural Economics S-1. (Farm Economic Problems) I.

The purpose of this course is to introduce students to the more important economic problems facing New England farmers. Increasing competition with other farm sections, long-time movements of farm prices and farm profits, farm credit, farm taxation, tariffs and other farm relief measures are some of the problems to be considered.

(See requirement for marketing trip below.)

2 class hours a week.

Credit, 2.

Agricultural Economics S-2. (Marketing) II.

This course deals largely with economic problems arising out of marketing farm products. Particular attention is given to marketing methods used in New England and to the comparison of local methods with methods used by farmers in competing sections. Principles and methods of co-operative

marketing used by successful co-operative associations are studied in detail in order to show how New England farmers may meet competition from associations in other sections, either as individual producers or as officers or members of local associations.

A two-day marketing trip to Boston or New York is required of all students in order to study at first hand the methods of handling products on the wholesale markets. This trip may be required in either semester.
2 class hours a week. Credit, 2.

Agricultural Engineering S-1 and S-2. (Farm Motors) I. II.

This course is a study of the principles of the gasoline engine and its accessories, as used in trucks, automobiles, tractors, and stationary work. Instruction is given in the laboratory by lectures, demonstrations, and exercises. Shop experience is given by overhauling machines brought in for repair.

3 2-hour laboratory periods a week.

Credit, 3.

Agricultural Engineering S-3 and S-4. (Farm Shop) I. II.

This course gives instruction in the care and use of carpenters' tools through bench work, repair of farm equipment, and building construction. Practice in building forms, mixing and placing concrete, framing, cutting rafters, etc., make up this portion of the subject. Instruction in forging, pipe fitting, soldering, and the use of machinists' tools for the repair of farm machinery and miscellaneous farm equipment, together with a study of pumps and water supply systems make up the other portion of the work.

3 2-hour laboratory periods a week.

Credit, 3.

Agricultural Engineering S-5. (Farm Engineering) I.

The principles underlying the practice of farm drainage are discussed. Instruction is given in the use of the engineer's level for the purpose of laying out and grading tile drainage ditches. In addition, practice is given in forging, pipe fitting, soldering, and use of machinists' tools which will help in the repair of farm machines and miscellaneous farm equipment. Part of the course is given over to the study of field implements and power driven machines. A study of various types of pumps and water supply systems is also included.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.

Agricultural Engineering S-6. (Dairy Mechanics) II.

This course is planned for men who are fitting themselves to take charge of dairy plants or allied lines of work. It includes a study of steam boilers, pumps, steam traps, water filters and softeners, belting, electric motors, milking machines, and refrigeration plants.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

Agricultural Engineering S-7 and S-8. (Farm Structures) I, II.

A study of the building materials commonly used in farm construction; details of construction and simple structural mechanics; the principles of design of such farm buildings as the dairy stable, hog house, horse barn, general purpose barn, poultry house, fruit and vegetable storage buildings is made. Each student will have opportunity to design in detail one of the major farm buildings in which he is particularly interested.

1 class hour and 2 2-hour laboratory periods a week.

{Credit, 3.

Agricultural Engineering S-9. (Drainage and Farm Structures) I.

This course is for vegetable gardening majors and will involve the study of underlying principles of drainage. Practice will be given in the use of the engineer's level for the purpose of laying out and grading tile drainage ditches. In the study of Farm Structures the materials, details of construction, simple structural mechanics, and principles of design of types of buildings suitable to the vegetable gardener will be made. Each student will design in detail one of the major buildings in his field.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.

Agricultural Engineering S-10. (Repair of Farm Equipment) II.

Instruction is given in forging, pipe fitting, soldering, and the use of machinists' tools for the repair of farm machinery and miscellaneous farm equipment, together with a study of pumps and water systems. (Fruit Growing majors).

3 2-hour laboratory periods a week.

Credit, 3.

Agricultural Opportunities for Women S-1. I.

A study of problems of vocational adjustments and of opportunities for women in agriculture and related fields.

1 class hour a week.

Credit, 1.

Bacteriology S-1. (Bacteriology and Rural Hygiene) I.

In this course bacteria are studied as to types and reproduction, together with methods of dissemination, followed by discussions on these micro-organisms as related to man and his environment.

The work of the course will be divided into sections having to do with the study of the sanitary production and handling of milk, water and food and into a section having to do with the study of bacteria in terms of diseases of man and animal and the relationship to environmental factors such as air, humidity, food and personal hygiene. The sanitary production and distribution of milk is an important problem to a community and under the discussions pertaining to milk are to be considered various avenues of infections, methods of maintaining a sanitary production and how to establish suitable means for checking anything pertaining to contamination. Since water supplies are of special importance to man, the construction of wells, cisterns, etc., will be considered briefly followed by discussions relative to contaminations and their consequences. The proper disposal of sewage offers a real problem of no small importance. Therefore, in this course will be discussed construction and installation of septic tanks, together with the study of some of the bacteriological work to establish their efficiency. Work has been planned in this course to present some of the problems pertaining to the production and distribution of foods, special attention being given to preservation methods.

In the latter part of this course will be presented some problems associated with the diseases of man and animal. Various disinfectants will be considered and some time will be devoted to a discussion on the use and preparation of serums for fighting disease.

The purpose of this course will be to acquaint the student with the importance of bacteria and the subject of bacteriology in agriculture, industry, the arts and the relationship of this subject to the health of man and animals.

3 class hours a week. (Animal Husbandry, Poultry and Dairy Manufacturers majors.)

Credit, 3.

Bacteriology S-2. (Bacteriology and Rural Hygiene) II.

This course is a continuation of Bacteriology S-1 for Animal Husbandry and Dairy Manufacturers majors.

3 class hours a week.

Credit, 3.

Bacteriology S-4. (Dairy Bacteriology) II.

Bacteria and other micro-organisms are the responsible agents for changes which occur in milk, and for the contagion which sometimes causes diseases. They are found in milk at times when leaving the udder, they get in with the dust and dirt while milking and they adhere to the dairy utensils which carry them over from one milking to the next. From the cow to the consumer there is the constant presence of these micro-organisms to contend with, on the one hand, and to foster on the other.

Many of these changes occurring in milk are undesirable, such as ropy milk, sour milk, bitter milk, tainted milk, etc. Many of these changes are encouraged as the ripening of cream for butter, of milk for cheese, of milks for milk drinks. The former are fought, the latter fostered.

Micro-organisms of typhoid fever, scarlet fever, diphtheria and other diseases find their way by means of milk to the consumer and produce epidemic forms of these diseases.

Much time is spent in making plate counts and interpreting results. The different bacteriological tests are studied, such as Breed and Methylene Blue. The proper use of these methods will quickly enable one to locate the source of trouble and check any further continuance.

It is evident, therefore, that to handle milk and milk products safely it is desirable to know something of the agents which are the source of so much attention in the dairy. This indicates the nature of the substance of this course. This course is required of all students who elect dairying as one of their special lines of work.

3 class hours and 2 2-hour laboratory periods a week.

Credit, 5.

Beekeeping S-1. (Fall Management, Wintering, and Honey) I.

The students are given an opportunity for individual handling of bees in the early fall, and field studies are made of the bee colony and its organization. Studies and practice in fall feeding are followed by a similar treatment of winter protection and the bees are then prepared for winter. During the latter part of the semester the surplus honey is extracted and prepared for market, a laboratory study made of the product and, finally, the commoner bee diseases are discussed and methods of control pointed out.

1 class hour and 1 2-hour laboratory period a week.

Credit, 2.

Beekeeping S-2. (Spring Management, Pollination, and Honey Production) II.

The first part of the semester is occupied in assembling and studying the equipment used in beekeeping, but as soon as the weather permits, work is resumed on the bees in the apiary. Studies are made in spring management; pollination in the apple orchards is particularly stressed, and attention is then turned to the preparation of the colonies for honey production.

Throughout the entire course, wherever possible, the work is made practical and individual, enough theory being given so that the student will understand the reasons for his manipulations.

1 class hour and 1 2-hour laboratory period a week.

Credit, 2.

Botany S-2. (Diseases of Trees and Shrubs) II.

This course is planned for students majoring in Horticulture. Topics presented follow: (1) Concept of a fungus and bacterium. (2) Parasitism. (3) Type specimen of tree diseases; heartrot, saprot, barkrot. (4) Woodrots. (5) Bud, leaf, flower and fruit blights. (6) Root and vascular parasites. (7) Non-parasitic diseases. With each type, closely allied forms are also presented together with the general methods for control. The types are taught objectively and definite periods set aside for oral quizzing.

1 class hour and 1-2 hour laboratory period a week.

Credit, 2.

Botany S-4. (Turf Plant Diseases) II.

This course is designed to demonstrate and explain, in a practical way, the structure and the function of roots, stems, leaves, buds, flowers, seeds and seedlings of grasses and other plants. Periods for demonstrations, discussions and lectures are provided.

1 class hour and 1 2-hour laboratory period a week.

Credit, 2.

Business Law S-1. I.

Required for freshmen. To consist of a particular study of the contract, drawing, reading and interpretation with specific problem work. Commercial paper, torts, equity and personal rights presented by lectures during the course. Particular stress is placed on the reasoning process.

3 class hours a week.

Credit, 3.

Business Management S-1. I.

This course is designed primarily for students majoring in Floriculture. It involves a study of records and accounts used by florists; costs and prices; uses of capital and credit; house and store management; advertising; buying

and selling; economic use of labor and equipment; general business trends as affecting the flower business; how the florist should make adjustments to meet economic changes; analyses of going concerns; and finally a bringing together of all the information studied and applying it to the successful organization of a business. The entire course is to be made as applicable and practical as possible.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

Business Management S-3. I.

This course is designed primarily for students majoring in Dairy Manufactures. The principles of business organization and management are considered in relation to the successful operation of a dairy plant. The course includes a study of the following: various records and accounts used by dairies; costs and prices; uses of capital and credit; economic trends as affecting the business; how to make adjustments in the business to meet economic changes; analyses of different types of going concerns; and finally a bringing together of all the information studied and applying it to the successful organization of a business.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

English Composition S-1 and S-2. I, II.

To consist of personal or business letters, or writing of a similar nature, and an oral presentation (a five-minute address or talk on an assigned topic to be prepared for each week, and as many heard as time permits.)

2 class hours a week.

Credit, 2.

English Composition S-4. II.

Required of seniors interested in dramatic presentation and elective for the rest. This course is a continuation of the freshman course; but lays particular stress on the drama and dramatic presentation and public speaking. (All Dramatic presentation endeavored by the Two-Year Course, or other short courses to be under the direction of the instructor in English Composition).

2 class hours a week.

Credit, 2.

Entomology S-2. (Insects of Ornamental Trees and Shrubs) II.

A course designed to acquaint the student with the major pests injurious to ornamental trees and shrubs. Life histories of the insects concerned, the types of injury, and methods of control will be studied throughout the course. Recognition of the major pests will be attained by a study of mounted specimens and by a study of the insects collected by the students in the class.

2 class hours a week.

Credit, 2.

Farm Management S-1 and S-2. (Farm Management and Accounts) I, II.

The work in this course involves a study of farm records and accounts; costs and prices of farm products; uses of capital and credit; types of farming, selection of crop and live stock enterprises; size, diversity and production as related to the successful farm business; farm layout and arrangement; economic use of labor, power and equipment; detailed analyses of both successful and unsuccessful farms, how the farmer should make adjustments to meet economic changes; and finally, a bringing together of the information gained and applying it to the successful organization of a farm business.

Actual farm records are used to illustrate the above points. The entire course is made as applicable and practical as possible.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

NOTE: — Farm Management S-1 will be given both semesters. The first semester will be for students majoring in Animal Husbandry and Dairy Manufactures; the second semester for students majoring in Poultry Raising, Fruit Growing and Vegetable Gardening.

Forestry S-2. (The Elements of Forestry) II.

A course designed to give the student an introduction to the practice of forestry in New England with especial reference to its application on the forested portions of farms and estates. The place of forestry in land management; the natural history and composition of the forest; the several objectives of forest management; methods of forest cultivation and improvement. 2 class hours a week. Credit, 2.

Forestry S-3. (Estate Forestry and Woodland Management) I.

A course designed to give the student a working knowledge of certain phases of forest management which may be applied to forests of moderate area in New England. The determination of the volume and value of the forest growing stock; stand improvement methods; the silvical characteristics of our native tree species and their availability for various uses; the silvicultural systems; seeding and planting in the practice of forestry; forest protection; forest products and by-products; animal life and the estate forest. Special lectures dealing with city forestry and arboriculture are given in connection with this course.

The field work in applied forestry is conducted on the Mount Toby Demonstration Forest.

1 class hour and 1 4-hour field and laboratory period a week. Credit, 3.

Home Economics S-1. (Food Selection) I.

This course is a study of the nutritional needs of persons of different ages and activity and the choice of foods to meet these needs. Consideration will also be given to food problems related to the experiences of one living away from home as well as to basic principles in the preparation and serving of simple meals.

1 class hour a week. Credit, 1.

Horticultural Manufactures S-1. I.

This course is designed for the students interested in food preservation, either as a business or for homemaking. The work covers the theories and practices of preserving fruits, vegetables and fruit products, together with the study of freezing and dehydration of foods.

Economy of manufacture is stressed. The student is required to keep an accurate record of costs and manufacturing operations.

1 class hour and 2 2-hour laboratory periods a week. Credit, 3.

Horticultural Manufactures S-2. II.

This is a continuation of Horticultural Manufactures S-1 and covers the study of manufacturing miscellaneous products. The work includes the manufacture of confections for both homemaker and small commercial producer, pickles and pickle products, maple products, citrus fruit products and the canning of meats, poultry and spring vegetables.

1 class hour and 2 2-hour laboratory periods a week. Credit, 3.

Horticultural Manufactures S-4. II.

The class and laboratory exercises in this course are planned to meet the needs of students majoring in Dairy Manufactures. General principles of food preservation and their application to the subject of dairying will be discussed in class exercises. Methods of preserving fruits and fruit products and judging and testing of commercial packs will be studied in the laboratory.

1 class hour and 2 2-hour laboratory periods a week. Credit, 3.

Rural Sociology S-1, S-2 and S-4. (Social and Economic Problems) I. II.

A study of the individual and his relationships and conflicts in society, particular note to be taken of rural society and its problems. Individual topics assigned, papers prepared and discussed in class. Rural religion, 4-H Club work, extension service and experiment station work and their significance in the farm problem presented by specialists in their field.

3 class hours a week. Credit, 3.

Soils and Crops S-1. (Soil Management) I.

Every agricultural interest is vitally concerned with the soil, its adaptations and its management for plant production. This course treats of the selection of suitable soils for the special purposes of agriculture, horticulture and floriculture.

Laboratory includes training in the use and interpretation of the maps of the U. S. Soil Survey and in tests of soil texture, organic matter and soil acidity. Practical field work will be given in judging the crop adaptation and value of soils, and field demonstration of the use of tillage tools on the college farm.

As a field project the student will be required to make a study of some farm, nursery or florist's plant, from the standpoint of soil conditions and methods of soil management in relation to the enterprise as a whole.

2 class hours and 1 3-hour laboratory period a week.

Credit, 3.

Soils and Crops S-2. (Fertilizers) II.

This course deals with the origin, manufacture, purchase and use of commercial fertilizer materials. A study will be made of the interpretation of fertilizer formula, analysis and guarantee. Special attention will be given to the newer concentrated fertilizer materials and to those produced from atmospheric nitrogen. The laboratory work will give practice in the identification of fertilizer materials, in the calculation of fertilizer formulas, and in the preparation of fertilizer mixtures.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

Soils and Crops S-4. (Field Crops) II.

The lecture hours of this course will be devoted to presentation and discussion of the most successful methods of fertilizing, cultivating, harvesting, and storing the field crops grown in New England. Special attention will be given to the choice of the best adapted varieties for the production of hay, pasture, corn, potatoes, and root crops.

The laboratory work will include the study of corn and potato varieties, identification of grass and weed species, and studies of purity and germination. Field observation of growing crops will be included as the season permits.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

Veterinary Science S-1. (Animal Sanitary Science) I.

Conservation of the health of animals is the keystone of successful animal husbandry. This course acquaints students with the essentials upon which the health of animals depends. In order that students may later guard the animals in their charge, attention is given to conditions favoring communicable and non-communicable diseases, and to prophylactic measures.

3 class hours a week.

Credit, 3.

PHYSICAL EDUCATION**Women**

This program aims at an all-round development of the student. It gives the student activity adapted to her needs; assists in overcoming remediable physical defects and bad health habits; it encourages good health standards, helps her build up skills in sports and games and swimming and leaves her with possibilities for spending leisure time wisely.

REQUIRED COURSES**Physical Education S-1. I.**

Outdoor season — basketball, games, special gymnastics, tennis, track.

Indoor season — basketball, games, special gymnastics, swimming, volley ball.

2 class hours a week.

Credit, 2.

Physical Education S-2. II.

Indoor season — badminton, basketball, clog, folk and tap dancing, special gymnastics, indoor baseball, swimming, volley ball.

Outdoor season — archery, baseball, special gymnastics, tennis.

2 class hours a week.

Credit, 2.

ELECTIVE COURSES**Physical Education S-3 and S-4. I. II. (For seniors) Credit, 2.**

The senior program is arranged to give the student an opportunity to express her desire for wholesome physical recreation, to further develop desirable character traits and social qualities and qualities of leadership.

Men**REQUIRED COURSES****Physical Education S-1. I. (RECREATION. — For freshmen. Outdoor games.)**

The following outdoor games are taken up: Soft ball, touch football, soccer, golf, and swimming. Men may elect football, cross-country, or tennis. The course aims to give every man the opportunity to develop sufficient control over his body to enable him to get pleasure from physical activities and to establish correct health habits.

2 laboratory hours a week for first half semester

Credit, 1.

Physical Education S-5. I. (RECREATION. — For seniors. Outdoor games)

Includes the games of badminton, volley ball, archery and swimming, with the object of giving the men a fund of exercise material for use in after school days. Men may elect football, cross-country, or tennis.

2 laboratory hours a week for first half semester

Credit, 1.

Physical Education S-3. I. (HYGIENE.) — For freshmen.

Lectures on personal hygiene including the physiological basis for sound health habits, the importance of the systematic planning of a student's daily program in order to provide the proper amounts of time for study with suitable periods of sleep, relaxation, recreation and sports; posture, appropriate types of exercises, proper nutrition, social adjustment, the necessity for frequent medical, optical and dental advice, sanitation and group health requirements.

1 class hour a week.

Credit, 1.

ELECTIVE COURSES**Physical Education S-4. II. (RECREATION. — For freshmen and seniors. Basketball and Hockey) January–March.**

Students electing this course must be regular members of the basketball or hockey squads and report regularly for practice with those squads. Credit, 1.

Physical Education S-6. II. (RECREATION. — For seniors. Baseball.)

Students electing this course will be divided into teams which will plan an intramural schedule. These men must report regularly for practice whenever scheduled.

Credit, 1.

Certificate of Citizenship

The Massachusetts State College charges a tuition fee of \$110 a semester to students who are not residents of Massachusetts. In order to satisfy the college authorities that an applicant is entitled to state tuition of \$50 per semester, they require a statement signed by the clerk of the city or town in which the applicant resides, certifying to the fact that the parent or guardian of the applicant is a legal resident of said city or town. Such a statement may be made on the form below. If this is not presented when the student registers the Treasurer has no option but to collect tuition on the above basis.

This is to certify that I am the father mother guardian

of

Student's Name

Signed

This is to certify that on the date specified below

. is a legal resident of

Above Signee

., Massachusetts.

Town or City

Signed

Town or City Clerk

Date

Seal

Mail this blank to ROLAND H. VERBECK, *Director of Short Courses*

MASSACHUSETTS STATE COLLEGE, AMHERST, MASS.

This certificate must be filed with application blank if lower tuition rate for citizens of Massachusetts is to be secured.

MASSACHUSETTS STATE COLLEGE, AMHERST, MASS.

SHORT COURSES AT THE MASSACHUSETTS STATE COLLEGE

Short courses are based on the idea that the motive which inspires study is the most significant factor in study itself, and that this motive rises when the student himself realizes he faces a problem that calls for a solution. Therefore there is no age limit. Enrolled in short courses are found the young and the old, the experienced and the inexperienced, the theoretical and the practical. In this grouping there is a value, since students learn from each other as well as from the instructors. Practically all Short Course students intend to make a direct application of the knowledge given. Hence the aim of Short Course work is to offer the largest amount of information and training in agricultural and horticultural lines in the shortest possible time. During the past twenty years Short Courses have served hundreds of students in this Commonwealth, and the demand for these courses in recent years has steadily continued.

DIRECTORY OF INFORMATION

A. The College.

Those desiring college catalogs, the President's annual report, and other pamphlets giving full information relative to entrance requirements, courses of study, expenses, opportunities for student labor, and so forth, should address Robert A. Hawley, Secretary, Amherst, Mass.

All questions regarding admission to the college, either to the freshmen class or to advanced standing, should be addressed to William L. Machmer, Dean of the College, Amherst, Mass.

B. Experiment Station.

The Experiment Station conducts investigations in as many lines of agricultural science and practices as its funds will permit. It has charge of the inspection of commercial fertilizers, commercial feeding stuffs, and milk-testing apparatus. Branch stations in cranberry and market-garden culture are maintained in other sections of the State.

The station considers the farmers' problems to be its problems and desires to keep in touch with them.

Requests for bulletins reporting the results of experiments and inspections, and for other information on the work of the station, should be addressed to Fred J. Sievers, Director of the Experiment Station, Amherst, Mass.

C. The Graduate School.

Questions relating to courses offered leading to the degrees of Master of Science and Doctor of Philosophy, admission and work required, should be addressed to Fred J. Sievers, Director of the Graduate School, Amherst, Mass.

D. The Extension Service.

Inquiries of a general nature regarding the work of the Extension Service, extension publications, or requests for new lines of work should be addressed to Willard A. Munson, Director of Extension Service, Amherst, Mass.

E. Short Courses.

For information concerning the Short Courses, the Stockbridge School of Agriculture, the Ten-Weeks Winter School, the Summer School, write or apply to Roland H. Verbeck, Director of Short Courses, Amherst, Mass.

APPLICATION FOR ENROLLMENT IN THE STOCKBRIDGE SCHOOL OF AGRICULTURE

Name.....Date.....
 Home Address.....Street.....State.....
 Present Occupation.....Age.....
 School or College Attended.....
 Name of School.....
 Place.....

Number of Years in High School.....
 Indicate by a check mark the course in which you desire to register. Do not check more than one.
 1. Animal Husbandry 5. Floriculture
 2. Dairy Manufactures 6. Vegetable Gardening
 3. Poultry Husbandry 7. General Horticulture
 4. Fruit Growing

References. — I am personally acquainted with the above applicant, and know.....to
 be of good moral character, industrious, studious, and physically capable.

1. Name.....Position.....

Address.....

2. Name.....Position.....

Address.....

(Two references are required, and should not be members of your own family. Your minister and your teacher, or a former employer, are desirable. These persons should sign the application themselves.)

Mail this blank to **ROLAND H. VERBECK, Director of Short Courses**

MASSACHUSETTS STATE COLLEGE, AMHERST, MASS.

Important: — Be sure to file citizenship certificate if State tuition rate is claimed.

The Ten Weeks' Winter School

The dates of this school are approximately from January 1, to March 10.
 The following courses or group programs were offered in 1933.

Ten Weeks' Course in Greenkeeping.

Ten Weeks' Course in Poultry Raising.

Ten Weeks' Course in General Farming.

Five Day Course in Milk and Cream Testing; Analyzing and Inspecting Milk Products.

Five Day Course in Milk Plant Operation and Manufacture of Surplus Milk Products.

Five Day Course in Ice Cream Making for beginners.

Five Day Course in Ice Cream Making for experienced men.

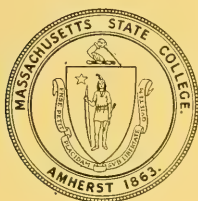
Ten Day Course in Dairy Bacteriology.

The Winter School appeals to practical farmers and all who wish short intensive, yet thorough courses suited to the practical man.

For catalog of any of the schools, write
 Director of Short Courses, M. S. C., Amherst, Mass.



Twenty-Fifth Annual Session
of the
Summer School
at
Massachusetts State College



JULY 5 TO AUGUST 3
1933
AMHERST, MASSACHUSETTS

Summer School this year is shortened to four weeks of intensive study and expenses are reduced to a minimum. Six courses carrying two semester credits each are offered for graduates and undergraduates. Also four courses of practical instruction in developing a "live-at-home" program are available. The tuition fee of five dollars will cover any course or courses in this program offered by the State College.

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Purposes.—The program is arranged for:

1. School superintendents and teachers connected with senior and junior high schools, normal schools, colleges and universities who seek advanced instruction either with or without relation to an academic degree.

2. Teachers who desire to pursue courses that will better prepare them for their work.

3. College students who desire to further their regular college work.

4. Any serious student who finds course suited to his preparation and needs.

5. Those persons who wish practical instruction in developing a "live-at-home" program through comprehensive courses in gardening, poultry, etc.

Registration.—Students should plan to arrive at the College on Wednesday, July 5, registering at Memorial Hall between the hours of 9 a.m. and 4.30 p.m. Room assignments can also be secured at that time, if not arranged for earlier. Late registrations after Wednesday should be made at the Short Course Office, South College. (Telephone Amherst, 900.)

Change of Program.—Notice of any proposed addition or cancellation after registration must be reported at once in person at the office of the Director of the Summer Session. After July 10 no changes in credit courses will be allowed.

Graduate School.—Students, properly qualified, who desire to receive credit in the Graduate School can make necessary arrangements with the instructor in charge of the particular course.

Rooms.—Double rooms are available in South College dormitory for men students and single or double rooms in Abigail Adams Hall for women students. The charge will be \$2.50 per person per week. Apply to Treasurer F. C. Kenney for reservations. Bed linen, towels, and blankets must be supplied by occupants.

Other rooms will be available in private homes near the College at about the same rate, bed linen and blankets furnished. See list at registration desk.

Board.—Meals may be secured near the campus at a cost of one dollar per day. The College cafeteria will be available also if a sufficient number register.

Note.—Summer School courses registering

COURSES OFFERED

Principles of Bacteriology.—A general course in fundamentals and the relationship of Bacteriology to public health, agriculture and industry. This is not an introductory course and should not be elected by students who desire further work in Bacteriology. Lectures and demonstrations.

8 class hours a week Credit, 2.
8:30-10:15 Tu. Th., 8:30-9:20 M. W. F. Sat.
Room 28, Microbiology Building

Mr. Packard

Business Law.—This course contrasts social and legal reasoning. The contract, its formation and regulation by law will be specifically studied by the case and lecture method. Property rights, sovereign rights, master and servant, and other contingent matters will be considered.

8 class hours a week Credit, 2.
8:30-10:15 M. Tu. Th. F.
Room 209, French Hall

Mr. Smart

Principles of Economics.—An introductory course laying stress on essentials. It aims to give such an introduction to the subject as will fit a student to read current economic literature and to pursue more advanced studies.

8 class hours a week Credit, 2.
1:15-3:00 M. Tu. W. Th.
Room 209, French Hall

Mr. Mackimmie

Current Economic Problems.—The aim of the course is to throw some light by lectures, readings and discussions on some of the perplexing problems of present day interest. The changing social order, economic planning, our money, our banks, our agriculture, our workers and our foreign relations are typical topics for discussion.

8 class hours a week Credit, 2.
10:30-12:15 M. Tu. Th. F.
Room 111, Stockbridge Hall

Mr. Cance

American Literature.—(English 56). In this course an attempt will be made to show how American life and the changing character of American institutions and ideals are mirrored in the works of its most significant writers. The men themselves, the forces that shaped them and made their contribution what it is will be set forth. The writers considered will be Freneau, Irving, Bryant, Cooper, Poe, Hawthorne, Emerson, Melville, Whitman.

8 class hours a week Credit, 2.
1:15-3:00 M. Tu. W. Th.
Room 111, Stockbridge Hall

Mr. Prince

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Garden Flowers.—(July 6—July 19). Twelve periods devoted to the consideration of soils, fertilizers, insects, diseases, annuals, biennials, perennials, bulbs, rock gardens, and roses.

10:15-12:15 M. Tu. W. Th. F. Sat.

Room 106, French Hall Mr. Thayer

Trees and Shrubs.—(July 20—August 2). Selection, arrangement, planting, care of trees and shrubs for various uses about the home grounds.

10:15-12:15 M. Tu. W. Th. F. Sat.

Room B, Wilder Hall Mr. Blundell

The Home Poultry Flock.—(July 6—July 19). Special attention will be focused on the opportunities in developing the production of poultry meat and table eggs for home consumption and sale. This will involve such topics as the annual replacement and management of the laying flock, housing, feeding, sanitation and disease control, preparing poultry and eggs for market, advertising, plant records and accounting.

1:00-3:00 M. Tu. W. Th. F. Sat.

Room 312, Stockbridge Hall Mr. Banta

Shop Work.—(July 20—August 2). The work offered in this course will consist of carpentry, bench wood working, and metal work. Students will be permitted to work on individual problems by arrangement. Stress will be put upon use and care of tools, development of skills, and repair and refinishing of furniture and metal ware.

1:00-3:00 M. Tu. W. Th. F. Sat.

Engineering Shop The Department

Food Preservation.—Section I. (July 6—July 20).

First Week—canning of fruits and vegetables, lectures, demonstrations and actual laboratory practice.

Second Week—manufactured products such as jams, jellies, conserves, marmalades, mincemeat, relishes.

8:00-10:00 M. Tu. W. Th. F. Sat.

Hort. Mfrs. Laboratory Mr. Rice

Food Preservation.—Section II. (July 20—August 2).

Repetition of above course.

8:00-10:00 M. Tu. W. Th. F. Sat.

Contemporary History.—A study of such current subjects as: just treatment for negroes, the depression, the enlargement of the President's powers, the reorganization of government, inflation of the currency, taxation, unemployment, farm relief, Constitutional amendments, Philippine independence, war debts and tariff barriers, Japan's withdrawal from the League and others.

3 class hours a week

Credit, 2.

10:30-12:15 M. Tu. W. Th.

Sociology Room, Hort. Mfrs. Bldg.

Mr. Cutler

EDUCATION COURSES OFFERED BY STATE DIVISION OF UNIVERSITY EXTENSION

In addition to the foregoing program, four credit courses in Education will be given from July 5 to July 31 inclusive. These are:

1. Public Education in Massachusetts
2. Philosophy of Education
3. Principles and Methods of Teaching
4. Educational Psychology

For bulletin explaining these courses in detail write Professor W. S. Welles, Massachusetts State College, Amherst.

The education courses are not included under the \$5.00 tuition fee for the summer school program.

UTILITY COURSES FOR HOME GARDENERS

Small Fruits.—(July 6—July 19). This course is designed to give practical instruction in the growing of the more important small fruits including strawberries, raspberries, blackberries, blueberries and grapes. Such topics as sites, soils, varieties, pruning, spraying, plantation management, harvesting and marketing will be considered.

3:15-5:15 M. Tu. W. Th. F. Sat.

Room 210, French Hall

Mr. Roberts

Vegetable Gardening.—(July 20—August 2). This course will cover discussions and practical field work in seedage, transplanting, soil preparation, manures, commercial fertilizers and lime, varieties and garden planning, cultivation, and cultural details for the more important garden plants. The work will be made as practical as possible.

3:15-5:15 M. Tu. W. Th. F. Sat.

Room 210, French Hall

Mr. Roberts

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MINISTRATION AND FINANCE.

MASSACHUSETTS STATE COLLEGE
1933 SUMMER SCHOOL
APPLICATION FOR ENROLMENT

Name in full.....

Permanent address

Education: Institutions, Degrees.....

.....

Position or occupation.....

Located where.....

Courses desired.....

.....

Applications should be submitted as soon as convenient to Short Course Office, Amherst, Mass.

THE M. S. C. BULLETIN

Amherst, Massachusetts

VOLUME XXV

OCTOBER, 1933

NUMBER 7

Published eight times a year by the Massachusetts State College,
January, February, March, April, May, June, October, November.
Entered at the Post Office, Amherst, Mass., as second class matter

ANNOUNCEMENT

OF THE

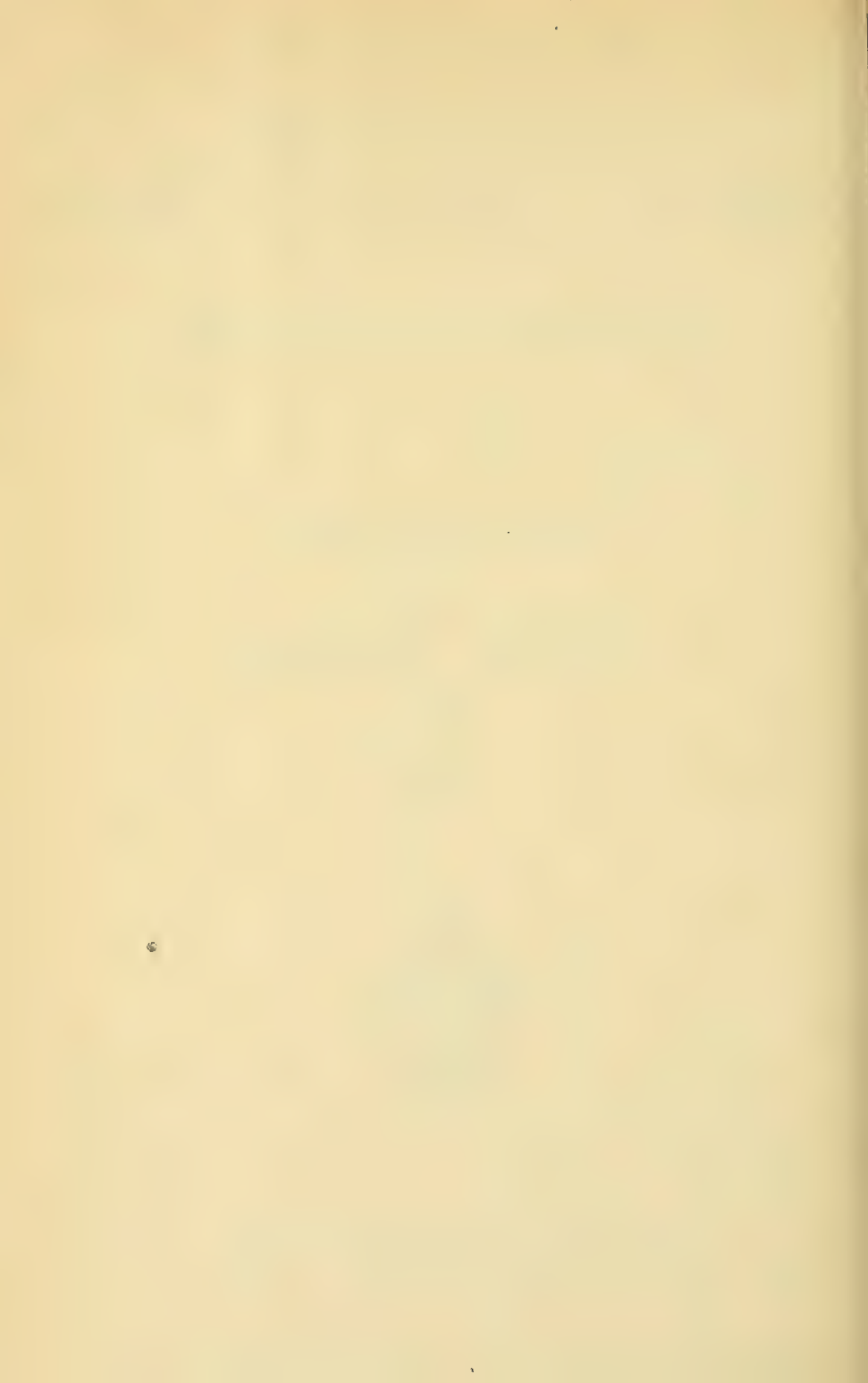
WINTER COURSES

FOR

1934



Massachusetts State College



OFFICERS OF GENERAL COLLEGE ADMINISTRATION

HUGH P. BAKER, D.Oec., LL.D.
President of the College

WILLIAM L. MACHMER, A.M.
Dean of the College

FRED C. KENNEY
Treasurer of the College

ROBERT D. HAWLEY, B.S.
Secretary of the College

BASIL B. WOOD, A.B.
Librarian of the College

ROLAND H. VERBECK, B.S.
Director of Short Courses

The Faculty of Instruction for Winter Short Courses

LUTHER BANTA, B.S.	Poultry
<i>Assistant Professor of Poultry Husbandry</i>	
WILLIAM H. DAVIS, Ph.D.	Botany
<i>Assistant Professor of Botany</i>	
LAWRENCE S. DICKINSON, B.S.	Agronomy
<i>Assistant Professor of Agronomy</i>	
JULIUS H. FRANDSEN, M.S.A.	Dairy Industry
<i>Professor of Dairy Industry and Head of Department</i>	
CHRISTIAN I. GUNNESS, B.S.	Agricultural Engineering
<i>Professor of Agricultural Engineering and Head of Department</i>	
JAY L. HADDOCK, M.S.	Agronomy
<i>Instructor in Agronomy</i>	
ROBERT P. HOLDSWORTH, M.F.	Forestry
<i>Professor of Forestry and Head of Department</i>	
S. CHURCH HUBBARD	Floriculture
<i>Assistant Professor of Floriculture</i>	
CLAUDE R. KELLOGG, A.M.	Entomology
<i>Assistant Professor of Entomology and Beekeeping</i>	
HARRY G. LINDQUIST, M.S.	Dairy Industry
<i>Vocational Instructor in Dairying</i>	
WAYNE J. LOWRY, M.S.	Horticulture
<i>Instructor in Horticulture</i>	
MERRILL J. MACK, M.S.	Dairy Industry
<i>Assistant Professor of Dairying</i>	
MINER J. MARKUSON, B.S.	Agricultural Engineering
<i>Assistant Professor of Agricultural Engineering</i>	
RANSOM C. PACKARD, M.S.	Bacteriology
<i>Vocational Instructor in Bacteriology</i>	

- J. HARRY RICH, B.S. Forestry
Assistant Professor of Forestry
- DONALD E. ROSS, B.S. Floriculture
Instructor in Floriculture and Greenhouse Foreman
- WILLIAM C. SANCTUARY, M.S. Poultry
Professor of Poultry Husbandry
- CHARLES H. THAYER Agronomy
Vocational Instructor in Agronomy
- CLARK L. THAYER, B.S. Floriculture
Professor of Floriculture and Head of Department
- JOHN H. VONDELL Poultry
Instructor in Poultry Husbandry and Foreman of Poultry Plant
- FRANK A. WAUGH, M.S. Landscape Architecture
Professor of Landscape Architecture and Head of Department

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APPLICATION FOR ENROLMENT
IN THE
WINTER SCHOOL SHORT COURSES

I hereby make application for admission to the following Winter Short Courses:

Date

Name

Home Address

Business Address

Age Present Occupation

Previous Schooling.....

Check special course or courses in which you desire to register.

- | | |
|--|--------------------------------|
| 1. The Winter Course in Poultry Raising | Unit 1 (Nov. 20-29; Dec. 4-12) |
| | Unit 2 (Dec. 13-19; Jan. 2-12) |
| | Unit 3 (Jan. 15—Feb. 2) |
| 2. Practical and Scientific Course for Florists | (Jan. 2—Mar. 10) |
| 3. Ten-day course in Dairy Bacteriology | (Jan. 2-13) |
| 4. Five-day course in Forestry | (Jan. 8-13) |
| 5. The Five Day Dairy Courses: | |
| (a) Milk and Cream Testing; Analyzing and Inspecting Milk Products | (Jan. 15-20) |
| (b) Milk Plant Operation and Manufacture of Surplus Milk Products | (Jan. 22-27) |
| (c) Ice Cream Making for Beginners | (Jan. 29—Feb. 3) |
| (d) Ice Cream Making for Experienced Men | (Feb. 5-10) |

Mail this blank to Roland H. Verbeck, Director of Short Courses, Massachusetts State College, Amherst, Mass.

Note:—File application blank in back of catalog if for Greenkeeping Course.

The college reserves, for itself and its departments, the right to withdraw or change the announcements made in its catalogue or in any of its official publications.

MASSACHUSETTS STATE COLLEGE WINTER SHORT COURSES

November 20, 1933 to March 10, 1934

The Winter School Short Courses have been maintained by the college for over twenty years. They meet a definite need in providing instruction for groups of men and women who can leave their regular duties during the winter months. The school closes in time for students to begin practical work in the spring.

The following courses or group programs are offered in 1934 for a full ten weeks from January 2 to March 10 with the exception of the course for Greenkeepers which runs one week longer:

1. Practical and Scientific Course for Florists (Jan. 2—Mar. 10)
2. Poultry Raising — Unit 1 (Nov. 20-29; Dec. 4-12) Unit 2 (Dec. 13-19; Jan. 2-12) Unit 3 (Jan. 15—Feb. 2)
3. Greenkeeping (An eleven weeks course—January 2 to March 14)

Each of these courses requires a definite number of students as a minimum if the course is to be given. Also there is a maximum limit to the size of classes, and in the greenkeeping course early application is always advisable. See explanation of limited enrolment under each course on following pages.

In addition to these longer courses there are other courses offered for shorter periods of time and less expense, as follows:

4. Dairy Bacteriology Course (Jan. 2-13)
5. One Week Forestry Course (Jan. 8-13)
6. Milk and Cream Testing; Analyzing and Inspecting Milk Products—Monday, January 15, 1:00 P.M. to Saturday, January 20, 12 M.
7. Milk Plant Operation and Manufacture of Surplus Milk Products—Monday, January 22, 1:00 P.M. to Saturday, January 27, 12 M.
8. Ice Cream Making for Beginners,—Monday, January 29, 1:00 P.M. to Saturday, February 3, 12 M.
9. Ice Cream Making for Experienced Men,—Monday, February 5, 1:00 P.M. to Saturday, February 10, 12 M.

The Dairy courses are so arranged that a student may take any one or all of them if he desires.

Winter School certificates will be awarded to students who complete the full work in the courses taken, with satisfactory grades.

Entrance Requirements

No entrance requirements have been fixed other than that the student shall be at least eighteen years of age and shall have completed the elementary or common schools.

Tuition, Fees and Expenses

There is a tuition fee of \$10.00 for the full Ten Weeks' Winter School Program and each student is required to pay to the Treasurer a \$5.00 registration fee. There are no laboratory fees in connection with any of the courses. The registration fee and tuition fee, must be paid at the time of registration, to the Treasurer of the college. There is also a health fee of \$1.50 for the full term, not for the five-day or ten-day courses.

Board may be obtained at the college dining hall cafeteria service for \$5.50 weekly, meal ticket plan. Rent for furnished rooms in private houses varies in price from \$2.50 to \$4.00 a week for each occupant.

The Short Course Office will be glad to assist students in locating rooms.

Registration at Short Course Office, South College

Please note the new arrangement, effective this year, whereby all Poultry students register on Monday, November 20 for the first unit of work. Registration for Florists and Greenkeepers will be held on Tuesday, Janu-

ary 2. Other short courses register on the Monday forenoon of the beginning week, with classes starting at 1:00 P.M. the same day. All fees are payable at College Treasurer's Office at time of registration.

Upon arrival the student should report at the office of the Director of Short Courses, located in South College; call Amherst 900, if telephoning

WINTER COURSE IN POULTRY RAISING

November 20, 1933 to February 2, 1934

General Information

This nine-week short course will begin on November 20, 1933 and classes will be completed on February 2, 1934. Students will register at the Short Course Office on Monday, November 20, from 8:00 A. M. to 12:00 M. Classes begin at 1:00 P. M. the same day.

Thanksgiving Day recess begins on Wednesday, November 29 at 12:00 M. and continues to Monday, December 4 at 8:00 A. M. Christmas vacation extends from December 20, 12:00 M., to January 2 at 8:00 A. M.

The number of students will be limited to twenty; unless six students register the course will not be given. Applications should be sent early as students will be accepted in the order of their application. (See blank in front of catalog.)

Aim.—The purpose of this course is to give the students a good survey of the entire field of poultry production and cover the work as intensively as time will permit. It is designed for those who wish to follow poultry keeping as a vocation and who can spend but a short time in preparation.

Facilities.—Our large poultry plant of 1500 birds equipped with modern incubators and brooders of various kinds, together with other adequate equipment and laboratories, will be at the service of students in carrying on their laboratory work.

The M. S. C. Poultry Club, a student organization, meets twice a month for special discussions on current topics and lectures by prominent poultrymen or specialists.

Entrance Requirements

There are no entrance examinations for admission, but students must be at least eighteen years old and have educational training through the elementary school, that is, eighth grade.

Tuition and Expenses

There is a tuition fee of \$9.00 for the full course, or \$3.00 for each three-week unit. A registration fee of \$5.00 will be charged for the full course and a pro rata fee for a three week unit. These fees must be paid at the time of registration and need not be sent in advance.

Board can be secured at the College dining hall, cafeteria service, for \$5.50 per week and rooms in private houses near the campus cost \$2.50 to \$4.00 a week. Textbooks will cost \$5.00 to \$10.00. One hundred dollars should cover all necessary expenses for the full course.

Rooms may be secured at time of registration from approved lists at Short Course Office.

Calendar

First Term	November 20-29: December 4-12
Second Term	December 13-19: January 2-12
Third Term	January 15 — February 2

Schedule of Classes by Terms for Three Years

<i>First Term</i>		<i>1933-1934</i> <i>Second Term</i>		<i>Third Term</i>	
W-1 Judging	7 hrs.	W-4 Brooding	7 hrs.	W-7 Diseases	7 hrs.
W-2 Breeding	7 hrs.	W-5 Feeding	7 hrs.	W-8 Marketing	7 hrs.
W-3 Incubation	7 hrs.	W-6 Housing	7 hrs.	W-9 Management	7 hrs.
		<i>1934-1935</i>			
W-4 Brooding	7 hrs.	W-7 Diseases	7 hrs.	W-1 Judging	7 hrs.
W-5 Feeding	7 hrs.	W-8 Marketing	7 hrs.	W-2 Breeding	7 hrs.
W-6 Housing	7 hrs.	W-9 Management	7 hrs.	W-3 Incubation	7 hrs.
		<i>1935-1936</i>			
W-7 Diseases	7 hrs.	W-1 Judging	7 hrs.	W-4 Brooding	7 hrs.
W-8 Marketing	7 hrs.	W-2 Breeding	7 hrs.	W-5 Feeding	7 hrs.
W-9 Management	7 hrs.	W-3 Incubation	7 hrs.	W-6 Housing	7 hrs.

Description of Courses

W-1. Poultry Judging.—A study of the characters effected by egg production and those that limit egg production in the individual. Trapnested birds with known records are constantly used to check the student's judgment in estimating production. This knowledge has direct applicability in the constant elimination of non-producers from the flock, and the selection of outstanding breeders.

W-2. Poultry Breeding.—The course combines in class and laboratory genetic theory and breeding applications. The various methods of selection are studied. Birds at the College are mated. The vital data about each breeder is recorded and studied in an up-to-date system of pedigree record keeping.

W-3. Incubation.—A study of incubation principles and practices is made in conjunction with the incubators in the well-equipped cellar at the College plant.

W-4. Brooding.—Brooding, as one of the most important phases of the poultry industry, is taught with the aid of modern equipment such as coal burning and electric brooders, and several kinds of battery brooders.

W-5. Poultry Feeds and Feeding.—This course embraces a study of the fundamental principles of nutrition, and their application to the problems of feeding the poultry flock—the most expensive item in the grower's budget. Feeding the growing stock, the laying flock, and fattening are all included.

W-6. Poultry Housing.—A careful study is made of the various physical and biological factors which are involved in keeping houses comfortable, dry and hygienic. The several types of houses on the College plant furnish good practice and study material.

W-7. Disease Prevention.—Embraced in this course are studies of normal and pathological anatomy; sanitary programs of disease control; and the use of disinfectants, vermifuges and remedies of known efficacy.

W-8. Marketing Poultry Products.—This course covers candling and grading of eggs, market classification of poultry and eggs, judging eggs, fattening; killing, picking, drawing and judging of live and dressed poultry.

W-9. Poultry Farm Management.—The modern trends of commercial poultry farm organization are studied by the survey method. Each student will prepare detailed plans for a farm he now owns or might hope to develop in the future. These plans will emphasize and correlate the work in breeding, incubation, brooding, growing, market egg and meat production, marketing and accounting.

PRACTICAL AND SCIENTIFIC COURSE FOR FLORISTS

January 2 to March 10, 1934

A special course for men and women already engaged in practical work in commercial floriculture arranged in cooperation with the Boston Gardeners' and Florists' Club.

General Requirements

The number of students will be limited to fifteen; unless ten students have registered by December 20, 1933, the course will not be given. Applicants should register early as they will be accepted in the order of their application.

Entrance examinations are not required but it is expected that every student will have had some practical experience in floricultural work and that he will have completed the elementary or common school work. Each applicant should present a personal recommendation from his employer or from some person of his acquaintance, showing the experience of the applicant in floricultural work.

The college reserves the right to reject any applicant obviously unqualified for the work or to dismiss any student whose presence, for any reason, proves detrimental to the other members of the school.

Those who complete the entire course with credit will receive the Winter School certificate of the College.

Expenses

	Low	High
Registration	\$ 5.00	\$ 5.00
Tuition Fee	10.00	10.00
Board (10 week at \$5.50—\$7.00)	55.00	70.00
Room Rent (10 week at \$2.50—\$4.00)	25.00	40.00
Textbooks	10.00	15.00
	\$105.00	\$140.00

Description of Courses

1. *Soils and Fertilizers.* — Origin of soils, soil types, soil moisture, tillage, organic matter, humus, fertilizers, mixing and application of fertilizers, soil sampling and testing.

2 class hours and 1 2-hour laboratory period a week.

Mr. Charles H. Thayer

2. *Greenhouse Construction and Heating.* — Origin growth and importance of the floricultural industry; development of the greenhouse; types of houses and construction; methods of greenhouse heating. Trips may be taken to visit greenhouse establishments in the vicinity of Amherst at an approximate total cost of \$2.00.

2 class hours a week.

Professor Clark L. Thayer

3. *Greenhouse Management.* — A study of the principles underlying the management of greenhouses, including soils, fertilizers, watering, ventilation, temperature regulation, insect and disease control.

2 class hours a week.

Assistant Professor S. Church Hubbard

4. *Propagation of Plant Materials.* — This course will present the principles of plant propagation with special reference to their application to plant materials in greenhouse and nursery practice.

2 class hours and 1 2-hour laboratory period a week.

Mr. Wayne J. Lowry

5. *Commercial Production.* — Special attention will be given to methods of culture (under glass) of roses, carnations, chrysanthemums, violets, and sweet peas. Other cut flower crops and various potted plants will also be considered.

3 class hours a week.

Assistant Professor S. Church Hubbard and Mr. Donald E. Ross

6. *Garden Materials.* — A study of the annuals, biennials, herbaceous perennials, and bedding plants which are used in outdoor work. Methods of propagation, culture, and uses will be considered.

2 class hours a week.

Professor Clark L. Thayer

7. *Flower Arrangement.* — A study of the principles underlying the use of flowers in funeral sprays and designs, table decorations, corsages, vase, bowl and basket arrangements; decorations for public functions; study of color with reference to such work.

5 class hours a week for three weeks. Laboratory work by arrangement.

Professor Clark L. Thayer and Mr. Donald E. Ross

8. *Plant Diseases.* — The diseases attacking floricultural crops—how to identify them, how they grow and develop, cultural practices favoring disease, and methods of control.

5 class hours a week for four weeks.

Assistant Professor William H. Davis

9. *Insect Pests.* — A study of the insects injuring floricultural crops, how to recognize them and their work in different stages, their habits and life histories, conditions favoring their development, and the most effective control measures.

5 class hours a week for three weeks.

Assistant Professor Claude R. Kellogg

10. *Discussion and Special Lecture Hour.* — Weekly meetings for the discussion of current problems in the floricultural industry or for lectures by individuals engaged in commercial work. Members of the class may also be assigned special topics for presentation.

1 class hour a week.

Information

For further information write to the Director of Short Courses, or to Professor Clark L. Thayer, Massachusetts State College, Amherst, Massachusetts.

WINTER COURSE FOR GREENKEEPERS

January 2 to March 14, 1934

A specialized course for men engaged in the profession of greenkeeping, or members of green committees. The courses are so arranged that all the factors of successful turf management are discussed individually and particularly in their relation to one another. The subjects as outlined can be effectively studied during the winter months.

General Requirements

An applicant for this school must be either a member of the green committee, a greenkeeper, or must have had experience on a golf course, and the application blank must be countersigned by the greenkeeper and chairman of the green committee.

No entrance examinations are required, but it is expected that the student will have a reasonable education in the English language.

The number of students is limited.

The college reserves the right to reject any applicant obviously unqualified for the work, or to dismiss any student for misconduct, or failure to properly meet the requirements of the course.

The winter school certificate will be given only to those who complete the full course with credit.

Registration January 2. Classes begin January 3.

Courses Offered

<i>Course</i>	<i>Weekly Periods</i>	<i>Length of Course</i>
Landscape Appreciation	1 Lecture	Full Term
Botany	1 Laboratory, 2 Lectures	Full Term
Water Systems	2 Laboratories, 3 Lectures	Five Weeks
Drainage	2 Laboratories, 3 Lectures	Five Weeks
Equipment	3 Laboratories, 2 Lectures	Five Weeks
Managerial Problems	3 Laboratories, 2 Lectures	Five Weeks
Grasses and Turf Culture	3 Laboratories, 2 Lectures	Six Weeks
Cost Keeping and Analysis	3 Laboratories, 2 Lectures	Four Weeks
Soils and Fertilizers	2 Laboratories, 2 Lectures	Full Term
Forum and special lecture hour daily during full term.		

Description of Courses

I. Water Systems. — A study of standard types of water systems, with particular reference to the relation of size of pipe, pressure and nozzles, to the flow and delivery of water.

Professor C. I. Gunness

II. Soils and Fertilizers (Special for Greenkeepers). — Fundamental properties of soils and their management as related to golf green conditions will constitute the main part of the course. The study of fertilizers and their uses will be made as complete as possible. Individual problems and discussions will be given all the time and attention warranted.

Mr. Charles H. Thayer and Mr. Jay L. Haddock

III. Equipment. — A study of the major equipment used on the golf course, with particular reference to mowers (fairway and putting green,) spraying equipment and compost mixers. A very thorough study of lawn mowers will be made in this course. All types of mowers are available for study. Minor equipment will also be discussed.

Assistant Professor L. S. Dickinson

IV. Managerial Problems. — This course uses for its laboratory a very large and complete model of a golf course, about which the many problems of a greenkeeper are studied and the influencing factors noted.

The making and presentation of reports to green chairmen and committees is also a part of this course.

Assistant Professor L. S. Dickinson

V. Grasses and Turf Culture. — At the completion of this course the student should be able to identify the various turf grasses and to thoroughly understand their cultural requirements. The various cultural practices and their effects are carefully studied and turf diseases and pests are also included in this course.

Assistant Professor L. S. Dickinson

VI. Drainage. — The entire problem of land drainage will be discussed and practical problems worked out. The student will be taught the use of the level and how to set ditch grades.

Assistant Professor M. J. Mackay

VII. *Botany for the Greenkeeper.* — Laboratory demonstration and lecture discussions dealing with the living plant and its parts and consideration of the work performed by each part.

Assistant Professor W. H. Davis

VIII. *Cost Keeping and Analysis.* — The value of cost keeping and its analysis will be demonstrated, and a method of cost keeping will be taught. The many factors that enter into the cost will be noted, analyzed and adapted to individual problems. The distribution and directing of the workmen will also be studied.

Assistant Professor L. S. Dickinson

IX. The lectures on landscape appreciation will be given by Professor Frank A. Waugh, Head of the Department of Landscape Architecture.

Forum and Special Lecture Hour. — One hour is set aside daily for a summarization of the preceding day's work, or for discussions with any visiting greenkeeper, green chairman, or for special lectures.

Assistant Professor L. S. Dickinson, Leader

WINTER SHORT COURSE IN FORESTRY

January 8 to January 13, 1934

General Information

This course in forestry is designed to be of assistance to owners and superintendents of woodlands of moderate area, such as farm woodlots, park areas, and forests owned as parts of residential estates. It is also intended to be of practical value to tree wardens and others charged with the care and protection of town shade trees and roadside forest areas. Those who desire an introductory short course in forestry will find this work useful.

The course aims primarily to assist in bringing about the improvement of the quality and value of woodlands from several points of view. The following subject matter is included: Tree diseases and remedial treatments; the elements of silviculture; forest utilization; forest tree insects; laboratory and demonstration work in such silvicultural subjects as forest weeding, improvement cuttings, thinnings, etc. One laboratory period will be devoted to a demonstration in forest measurement. Field and laboratory work will be conducted on the Mt. Toby Demonstration Forest of 755 acres which is owned by Massachusetts State College.

Admission

Students taking this course must be at least eighteen years of age and must have a common school education. The course is limited to twenty-five students and will not be given unless at least ten students register for the work.

Enrolment

Fill in application blank in front of this announcement and send to Director of Short Courses, Massachusetts State College.

Students will register for this course on Monday morning, January 8 at the Short Course Office from 8:00 A.M. to 12:00 M. Classes will begin that afternoon.

Tuition, Fees and Expenses

There is a tuition fee of \$2.00 and each student is required to pay the Treasurer of the College a registration fee of \$2.00.

WINTER SHORT COURSE IN DAIRY BACTERIOLOGY**(Methods for Testing Milk)****January 2 to January 13, 1934.***General Information*

Each year numerous requests are received by this department for individual instruction in modern bacteriological methods for testing milk. The majority of these requests are due to the interest of the modern dairy man in the quality of his product, as expressed by results of chemical and bacteriological examinations and a desire to more accurately control production on the farm and in the dairy plant. A two weeks course on modern testing methods has been designed to meet the need of the dairy man who wishes to provide a means of making these bacteriological tests in his own plant laboratory.

Admission and Registration

There is no prerequisite for the course. Students must be at least eighteen years of age and must have completed the elementary or common schools.

Students should enroll by mail. See special application blank in front of announcement. Early registrations will be given preference.

Ten students will be the maximum number admitted to this course. Unless five students have registered prior to the opening day, the course will not be given.

Tuition, Fees and Expenses

There is a tuition fee of two dollars and each student is required to pay the Treasurer a registration fee of two dollars per course.

Description of the Course

Five afternoons each week will be devoted to laboratory discussions, demonstrations and manipulation of the Breed and Brew, Frost Micro Plate, Methylene Blue Reduction, Burri and Standard Plate Methods of examining milk. Each student will be given ample opportunity to perform these tests on numerous milk samples. Instruction will also be given in the correct use and care of the compound microscope.

Mornings may be spent in the department or college library where there are available numerous books and pamphlets on dairy bacteriology and the relationship of milk and milk products to the Public Health.

Information

For further information write to the Director of Short Courses, or to Professor Leon A. Bradley, Massachusetts State College, Amherst, Mass.

WINTER SHORT COURSES IN DAIRYING**January 15 to February 10, 1934.**

The courses are intended not only for experienced milk plant, ice cream and creamery men, but for men who have little dairy experience, but with a desire for knowledge in the various dairy manufacturing fields. Those who are inexperienced should plan to take all four courses. Farm men and women, who are responsible for milk handling, butter making, or the making of soft cheese will find the first and second courses adapted to their needs.

There are no prerequisites for the courses. A certificate showing the subject studied is given at the end of each course to those doing satisfactory work.

Admission

There are no entrance requirements except that the student must be eighteen years of age and must have a common school education.

Registration

Students should enroll by mail. See application blank in front of announcement.

Enrolments for each of the four dairy courses described in the following paragraphs should be made at least three days prior to the beginning of the course. Those failing to enroll by mail may do so on arrival for the course. The work begins for each course on the afternoon of the opening day. Therefore, those enrolling should arrive early enough in the morning so that time is available for registering, securing accommodations, etc.

Early registrations are given preference. A maximum of 20 will be adhered to for all courses. Second courses will be given in case the number of registrants warrant it.

All applications for entrance to these courses should be addressed to the Director of Short Courses, Massachusetts State College, Amherst, Mass.

Upon arrival the students should report at the office of the Director of Short Courses in South College, for information concerning rooming accommodation and for registration.

Tuition, Fees and Expenses

There is a tuition fee of two dollars for each course, and each student is required to pay the Treasurer a registration fee of two dollars per course.

Students will need white suits for laboratory work, and may wish to purchase one or more textbooks for each course.

Board may be obtained at the college dining hall at \$5.50 a week or in private boarding houses from \$6.00 to \$7.00. Rent for furnished rooms in private houses varies from \$2.50 to \$5.00 a week for each occupant.

*Description of Courses**Course I. Milk and Cream Testing; Analyzing and Inspecting Milk Products—(January 15-20)*

This course is designed to help men and women to become proficient in operating the Babcock test, acidity tests, use of the lactometer, the Methylene Blue test and Plate Counts, as well as other methods commonly used in testing, analyzing, and inspecting dairy products.

The course should be of special value to those interested in dairy inspection work, cow testing association positions, or laboratory control work which is essential in milk handling.

Opportunity is given during the course to secure the Massachusetts Babcock Testing certificate.

Course II. Milk Plant Operation and Manufacture of Surplus Milk Products—(January 22-27)

This course should help milk plant and creamery employees to a better understanding of the essentials involved in the scientific handling of milk and creamery products.

Some of the lecture and discussion topics are: general scope of the market milk industry, value of milk as a food, relation of bacteria to milk, sanitary production, marketing, plant construction and selection of equipment, processing, delivery, handling surplus, standardizing, grading, and labeling, and care of milk in the home. Special attention will be given to economic methods of marketing surplus milk through cottage and other soft cheeses, and commercial buttermilk.

Laboratory exercises will cover milk sampling, the scoring of dairies, cream line problems, the scoring of milk, the study of milk plant equipment, milk processing, the manufacture of commercial buttermilk, of cottage, neufchatel, and cream cheese and butter.

Practical application of dairy tests and of lecture work will be carried out in the college creamery and dairy barn.

Course III. Ice Cream Making for Beginners (January 29—February 3)

This course is planned for those wishing to enter the ice cream business, but have had no previous experience along this line.

Lecture and laboratory work will cover the selection of ingredients for the ice cream mix, standardizing and calculating the mix, processing the mix, freezing and yield control, causes and remedies of ice cream defects, etc. Actual experience will be secured in making ice cream mixes and freezing work. Different kinds of ice cream will be made, as well as ices and sherbets. The handling of refrigeration machinery will be included in this course.

All those enrolled in this course should plan to stay over for the second week's work in ice cream making.

Course IV. Ice Cream Making for Experienced Men (February 5-10)

This course is designed for those who have had actual experience in ice cream making and wish to secure a more thorough knowledge of their work.

Lectures and laboratory work will cover a study of various factors affecting efficient freezing operations, the effect of variations in composition and manufacture on quality of the finished product, etc. Round table discussions of new methods and recent experimental work, as well as individual problems will be included. Some specialists in the ice cream business and closely allied fields will speak before the group.

**APPLICATION FOR ENROLMENT
IN THE
TEN WEEKS' COURSE FOR GREENKEEPERS**

January 2, to March 14, 1934.

Date

Name

Home Address

Business Address

Age..... Present Occupation.....

Previous Schooling.....

I hereby certify that the above applicant for the Winter School Course for Greenkeepers is either,—(1) a member of the green committee, (2) a greenkeeper, or (3) an employee of this club.

Signed
Greenkeeper

Signed
Chairman of the Green Committee

Send this blank to Roland H. Verbeck, *Director of Short Courses*, Massachusetts State College, Amherst, Mass.

THE STOCKBRIDGE SCHOOL OF AGRICULTURE

A Two-Year Non-Degree Course in Vocational Agriculture.

Special Attention of Principals and Teachers.

For fifteen years the Massachusetts State College in addition to its degree courses has been conducting non-degree courses for students who wish to get fundamental training for some agricultural business. More and more, high school graduates, not otherwise prepared for college entrance, whose inclinations are towards the practical field of agriculture are finding the work of this department of the College well suited to their needs.

It will help you in your vocational guidance work in high school to know fully what service we can render you and your students, through the Stockbridge School of Agriculture.

The work is divided into seven major programs—dairying, animal husbandry, poultry, floriculture, horticulture, pomology, and vegetable gardening, one of which is selected by the student, depending on the job for which he wishes to secure training.

No examinations are required. Minimum age seventeen years; minimum schooling eighth grade. One hundred and eighty-eight students were enrolled in 1933. Ninety per cent are high school graduates.

The first year consists of six months' study at the College and six months of required agricultural placement training, under the supervision of the College. During the placement period the student is expected to learn much of the practical side of his particular vocation. He is recommended to a position. These positions are on farms, in dairies, greenhouses, poultry plants. The nature of the position depends on the student's particular objective.

The second year consists of eight months' study at the College. On the completion of the course a diploma is granted. Tuition is \$50.00 per semester to residents of the Commonwealth. Semester begins October 1, 1934.

THE M. S. C. BULLETIN

AMHERST, MASSACHUSETTS

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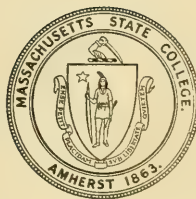
For the Sessions of 1933-1934



MASSACHUSETTS STATE COLLEGE

THE GRADUATE SCHOOL CATALOGUE

This issue of The Bulletin contains the catalogue of the Graduate School for the sessions of 1933-34 which is part of the Seventieth Annual Report of the Massachusetts State College and which in conjunction with the general catalogue of the College constitutes Part II of Public Document 31. (Sec. 8, Chapter 75 of the General Laws of Massachusetts.)



CALENDAR.

1934.

February 3, Saturday, 12:00 M.	First semester ends
February 7, Wednesday, 8:00 A.M.	Second semester begins
February 22, Thursday	Holiday, Washington's Birthday
March 31-April 9, Saturday, 12:00 M.-	
Monday, 8:00 A.M.	Easter Recess
April 19, Thursday	Holiday, Patriots' Day
May 30, Wednesday	Holiday, Memorial Day
June 1-4, Friday-Monday	Stockbridge School Commencement
June 8-11, Friday-Monday	Commencement
June 14-16, Thursday-Saturday	Entrance Examinations
September 12-15, Wednesday-Saturday	Entrance Examinations
September 17, Monday	First Semester begins for Freshmen
September 19, Wednesday	First Semester begins for Upper Classmen
October 1, Monday	First Semester begins for Stockbridge School
October 12, Friday	Holiday, Columbus Day
November 12, Monday	Holiday, Observance of Armistice Day
November 28-December 3, Wednesday, 12:00 M.-	
Monday, 8:00 A.M.	Thanksgiving Recess
December 19-January 2, Wednesday, 12:00 M.-	
Wednesday, 8:00 A.M.	Christmas Recess

1935.

February 2, Saturday, 12:00 M.	First semester ends
February 6, Wednesday, 8:00 A.M.	Second semester begins
February 22, Friday	Holiday, Washington's Birthday
March 30-April 8, Saturday, 12:00 M.-	
Monday, 8:00 A.M.	Spring Recess
April 19, Friday	Holiday, Patriots' Day
May 30, Thursday	Holiday, Memorial Day
May 31-June 3, Friday-Monday	Stockbridge School Commencement
June 7-10, Friday-Monday	Commencement
June 13-15, Thursday-Saturday	Entrance Examinations

THE TRUSTEES OF THE COLLEGE.

Organization of 1934.

MEMBERS OF THE BOARD.

	TERM EXPIRES
GEORGE H. ELLIS of West Newton	1934
PHILIP F. WHITMORE of Sunderland	1934
JOHN CHANDLER of Sterling Junction	1935
FREDERICK D. GRIGGS of Springfield	1935
NATHANIEL I. BOWDITCH of Framingham	1936
HOWARD S. RUSSELL of Waltham	1936
MRS. JOSEPH S. LEACH of Walpole	1937
JAMES F. BACON of Boston	1937
FRANK GERRETT of Greenfield	Deceased
HAROLD L. FROST of Arlington	1938
CHARLES H. PRESTON of Danvers	1939
DAVID J. MALCOLM of Charlemont	1939
DAVIS R. DEWEY of Cambridge	1940
JOHN F. GANNON of Pittsfield	1940

MEMBERS EX OFFICIO.

His Excellency The Governor, JOSEPH B. ELY of Westfield, *President of the Board of Trustees*
 HUGH P. BAKER, *President of the College*
 PAYSON SMITH, *State Commissioner of Education*
 ARTHUR W. GILBERT, *State Commissioner of Agriculture*

OFFICERS OF THE TRUSTEES.

His Excellency The Governor, JOSEPH B. ELY of Westfield, *President*
 GEORGE H. ELLIS of West Newton, *Vice-President*
 ROBERT D. HAWLEY of Amherst, *Secretary*
 FRED C. KENNEY of Amherst, *Treasurer*
 FRANK GERRETT of Greenfield, *Auditor, Deceased*

The Graduate School Staff.

HUGH P. BAKER, *President of the College*
 FRED J. SIEVERS, *Director of the Graduate School*
 Dean of the College
 Heads of all Divisions
 Heads of Departments offering Graduate Courses
 Professors, Associate Professors and Assistant Professors teaching Graduate Subjects

GENERAL INFORMATION.

HISTORY.

The history of the Graduate School dates back almost to the establishment of the college. In 1876 graduate courses leading to the degree of doctor of science were offered in botany by President Clark and in chemistry by Professor Goessmann. In 1892, under President Henry H. Goodell, graduate courses leading to the degree of master of science were offered in mathematics, physics, chemistry, agriculture, botany, entomology and veterinary. Horticulture was added to the list in 1894. In 1897, graduate courses with chemistry, botany and entomology as the major and minor studies were offered leading to the degree of doctor of philosophy. The first master of science degrees were conferred on two candidates in June of that year.

A fellowship under the title "instructor in chemistry" was offered in 1899 "to some recent graduate who desires, in connection with his regular duties as instructor, to carry on advanced work for one or more years."

The first doctor of philosophy degree granted by the Institution was conferred at commencement in June, 1902.

In response to the demand for a more complete organization of the Graduate School, the trustees, in June, 1908, appointed Dr. Charles H. Fernald, Professor of Zoölogy, as director. Professor Fernald had been closely identified with the work and development of the Graduate School during the entire time of his connection with the Institution—a period of twenty-two years. After his retirement, in June, 1910, the school was without a director for two years.

In 1912, Dr. Charles E. Marshall, Professor of Microbiology, was elected director, and under his administration new courses were provided. In 1915, the subjects available as majors for the degree of doctor of philosophy were botany, chemistry, entomology, horticulture, and microbiology. Those qualifying as major subjects for the degree of master of science were agriculture, agricultural economics, agricultural education, botany, chemistry, entomology, horticulture, landscape gardening, mathematics and physics, microbiology, poultry science, rural sociology and zoölogy. The following year the trustees voted to establish courses leading to the degrees of master of science and master of agriculture in agronomy and in animal husbandry.

Following the death of Dr. Marshall, which occurred on March 20, 1927, Dr. Henry T. Fernald, Professor of Entomology, was appointed as director, a position in which he served until June 30, 1930—the date of his resignation from the Institution.

Beginning with July 1, 1930, the responsibilities of administration of the Graduate School were combined with those of the Agricultural Experiment Station. This combination was considered expedient and advisable since both these units in the Institution deal with research. This arrangement is proving mutually beneficial by making the staff and equipment of the Experiment Station available for service in the Graduate School, and by in turn providing an opportunity to utilize the services of graduate students on organized research projects.

LOCATION AND LANDS.

The Massachusetts State College is located in Amherst, a town of about six thousand people, overlooking one of the most picturesque sections of the Connecticut Valley. From the standpoint of teaching material in the field of science and agriculture, the location is ideal. Amherst is ninety-seven miles from Boston, fifty miles from Worcester, twenty-five miles from Springfield, eighteen miles from Greenfield and eight miles from Northampton. Busses and electric cars connect the town with Northampton, Greenfield, Holyoke and Springfield, or it can be reached direct over the Central Vermont Railroad. The campus consists of a tract of approximately seven hundred acres, lying about a mile north of the village center. The College is well provided with modern buildings and equipment, description of which may be found in the general catalogue.

PURPOSE AND SCOPE OF THE GRADUATE SCHOOL.

The purpose of the Graduate School is to provide qualified students with proper guidance in the methods of advanced study and research. Courses leading to the

degrees of doctor of philosophy, master of science, and master of landscape architecture are available. Students who desire advanced courses but who do not wish to become candidates for an advanced degree are also admitted.

DOCTOR OF PHILOSOPHY.

Candidates for the degree of doctor of philosophy are required to pursue study in three subjects, one of which is designated as the major, and the others as minors. An original thesis is considered a part of the major subject. The degree is conferred upon graduate students who have met the following requirements:—

1. The devotion of at least three years to three subjects of study and research in residence at the College.
2. The earning of not less than one hundred credits of which not less than sixty-five shall be in the chief or major subject, and of not less than fifteen in each of two minor subjects.
3. The preparation of a satisfactory thesis.
4. The passing of final examinations, written and oral, in both the major and minor subjects.
5. The presentation of evidence of a working knowledge of both French and German.
6. The passing of a public oral examination.
7. The payment of all College fees and expenses.

It should be emphasized that the requirements for this degree are not computed primarily in terms of time and credits but that the degree is conferred only upon such students as have reached satisfactory attainment in some special branch of learning.

MASTER OF SCIENCE.

Candidates for the degree of master of science are required to pursue study in two subjects, one of which is designated as major and the other as minor. When desirable and approved by the director, the minor may be made up of subjects from more than one department. An original thesis is considered a part of the major subject.

The degree is conferred upon graduate students who have met the following requirements:—

1. The devotion in residence of at least one year to two subjects of study and research.
2. The earning of not less than thirty-four credits of which approximately two thirds shall be in the major subject.
3. The preparation of a satisfactory thesis in the major subject.
4. The passing of final examinations written and oral in the major subject.
5. The payment of all College fees and expenses.

MASTER OF LANDSCAPE ARCHITECTURE.

Candidates for the degree of master of landscape architecture are expected to conform to the established courses as specified by the department of landscape architecture. The degree is conferred upon graduate students who have met the following requirements:—

1. Work covering at least three years, of which a minimum of one and one-half years must be devoted to study in residence, and a minimum of one year spent in practice outside of the College, specific requirements concerning the nature of such practice to be laid down by the department.
2. Submission of a complete written report on the work done in practice outside of the College.
3. Written approval from the employer as to the quality of service during the period devoted to practice outside of College.
4. Preparation of a satisfactory thesis.
5. The presentation of convincing evidence of genuine aptitude for some branch of landscape architecture as design, construction or management.
6. Completion of final examinations.
7. Payment of all College fees and expenses.

The degree of bachelor of landscape architecture may be earned upon the completion of one year of specialized work in that field. (See page 28.)

NON-DEGREE ENROLLMENT.

Graduate work may be taken by students who are not candidates for a degree. Such enrollment permits the special privilege of a wider range in the selection of courses. The courses selected should, however, bear an appropriate relation to each other and be within the confines of the preparation of the student. A statement of the subjects chosen must in each case be submitted to the director of the Graduate School for approval.

GENERAL STATEMENT.

A working knowledge of French and German is considered important for successful graduate work in practically all the major lines and is required for the doctor of philosophy degree. Students not offering modern language for admission will be given an opportunity to acquire same along with their graduate work.

The graduate staff reserves the privilege of recommending and allowing courses completed in other institutions as a part of the work for advanced degrees at this College, whenever such a policy seems advisable. A certain amount of work *in absentia* will also be permitted, provided it is prosecuted under satisfactory direction and supervision, and regular and sufficient reports of progress are submitted.

The courses as listed under departmental statements in the succeeding pages constitute the principal and characteristic work of the graduate student.

The College reserves the right to make changes in the requirements for degrees without notice.

ADMISSION.

Admission to the Graduate School will be granted:—

1. To graduates of the Massachusetts State College.
2. To graduates of other institutions of good standing who have received a bachelor's degree substantially equivalent to that conferred by this College.

In case an applicant presents his diploma from an institution of accepted standing but has not taken as much of the subject he desires to select for his major study as is required of graduates of Massachusetts State College, he will be required to make up such parts of the undergraduate work in that department as the head of the department may consider necessary, without credit toward his advanced degree. In the case of minor subjects for advanced degrees, credit begins to accrue from the point where the previous training of the applicant ended, whether it be graduate or undergraduate in its rating at this College—subject, however, to such limitations as may be fixed by the department concerned.

Admission to the Graduate School is not to be interpreted as implying admission to candidacy for an advanced degree, for that is subject to specific requirements laid down by the departments in which the student selects his major and minor work.

THESIS.

A thesis is required of each candidate for an advanced degree. It must be on a topic belonging to the candidate's major subject, must indicate that its writer possesses the ability to carry on constructive study and that he has the imagination necessary for independent thinking.

The thesis in its final form, of which three copies are required, after receiving the approval of the thesis committee, must be submitted to the director by June 1 of the year in which the student is to present himself for the advanced degree, and before he may take the required final oral examination.

FINAL EXAMINATIONS.

For the degree of doctor of philosophy final examinations on the minors are given upon the completion of the subjects. In the major subject, a written examination, if successfully passed, is followed by an oral examination in the presence of the graduate staff.

For the degree of master of science, or master of landscape architecture, a final

examination in the major, which may be written or oral, or both, is given by the department concerned.

COURSES OFFERED.

Courses available as major subjects for the degree of doctor of philosophy:—

Agricultural Economics	Chemistry.
Agronomy.	Entomology.
Bacteriology.	Pomology.
Botany.	Sociology.

Courses available as major subjects for the degree of master of science:—

Agricultural Economics.	Education.
Animal Husbandry.	Entomology.
Agronomy.	Horticultural Manufactures.
Bacteriology.	Pomology.
Botany.	Poultry Science.
Chemistry.	Sociology.
Dairy Industry.	

Courses available for the degree of master of landscape architecture:—

Landscape architecture.

Courses available as minor subjects:—

Agricultural Economics.	Geology.
Agronomy.	German.
Animal Husbandry.	Home Economics.
Bacteriology.	Horticultural Manufactures.
Botany.	Landscape Architecture.
Chemistry.	Mathematics.
Dairy Industry.	Physics.
Economics.	Physiology.
Education.	Pomology.
English.	Poultry Science.
Entomology.	Sociology.
Floriculture.	Veterinary Science.
Forestry	Zoölogy.
French.	

ESTIMATE OF EXPENSES.

Massachusetts State College imposes a charge of \$50 per semester for resident students which covers tuition, laboratory and student health fees. For non-resident students this charge is \$110. Board should not be in excess of \$9 per week with a minimum of about \$6. Rooms can be rented at from \$15 to \$20 per month and the cost of books, fees and incidentals should not exceed \$100 per year.

GRADUATE COURSES DURING THE SUMMER.

The College offers opportunities to pursue graduate courses during the summer in connection with the regular Summer School. While provision may be made for special study with several departments during the summer period, the scheduled courses are offered primarily for teachers who seek advanced work in education and closely related subjects for purposes of better preparing themselves for more effective service in the teaching profession. Details regarding courses offered, facilities for study, environment, etc., may be found in the Summer School catalogue, a copy of which is available upon request to the director of Short Courses.

ASSISTANTSHIPS.

Through a fund set aside for that purpose, the College offers a number of graduate assistantships to students. The value of these is limited to \$600 per year, and appointment is made for a one-year period. These appointments are especially suited to students who desire to gain teaching experience and make themselves at least partly self-supporting while continuing their education. It should be recognized, however, that, in cases where students render this part-time service in

return for the financial assistance extended, the residence time requirements for the degree in question are necessarily longer. Application for appointment to any assistantship should be made to the director of the Graduate School.

FELLOWSHIPS.

The Agricultural Experiment Station in its program of investigation frequently finds it desirable to utilize the services of graduate students qualified to do certain types of technical work required in connection with its several research projects. Funds are available for this purpose and qualified students may be elected to such fellowships. Not infrequently this arrangement affords an opportunity for the student to satisfy his thesis requirement by completing some unit of work within the larger project organized in the Institution's research program.

In recent years industrial concerns have been rather anxious to have certain investigations undertaken for them by the Experiment Station. For this service they are willing to lend financial support, and in deserving cases it has proven very desirable to accept and utilize these funds for fellowship purposes. At present several fellowships are supported on this basis. These are proving very satisfactory from the standpoint both of the student and the industry supporting the investigation.

THESES.

1. The objective of a thesis should be an attempt to make a real contribution to knowledge and practice. When completed it should be of a quality worthy of publication as a contribution from the department concerned.

2. The thesis, in its completed form, will be judged largely upon the ability of the author to review literature and reach definite deductions; to formulate a problem, plan a method of attack, and work out a solution; and to summarize his material and draw conclusions. Scholastic attainment in writing and presenting the results of the study will also be an important factor in the evaluation. No thesis markedly poor in its English will be accepted.

3. After the student, in consultation with his major adviser (head of the department in which the student selects his major), decides upon a thesis subject, he is required to submit an outline to the director of the Graduate School. The director, with this as a basis, selects from the graduate staff a thesis committee to which the outline is submitted for approval. This committee will, thereafter, have direct charge of all matters pertaining to said thesis, and it is recommended that the student use the advice available from this source in the progress of his research. The thesis must have the approval of this committee before arrangements are made for the final examination for the degree.

4. Three complete, bound copies of the thesis, including drawings and any other accessories, are required by the graduate school office in order that the files in the director's office, the College library and the department in which the thesis was prepared may be supplied.

5. If the thesis is printed, whether in periodical or book form, the fact that it is a thesis submitted for an advanced degree at Massachusetts State College shall be explicitly stated in the title itself or as a footnote on the first page. Such modifications as may be deemed necessary for publication shall have the approval of the director.

6. Because of the time required to give adequate consideration to the research conducted by the student, it is highly desirable that theses be submitted to the committee, in the case of doctors' theses, not later than March 15, and in the case of masters' theses, not later than May 15 of the academic year in which the degrees are to be conferred. The theses in their final form shall be deposited with the director by June 1.

7. If typewritten, whether designed for publication or to remain in the type-written form, the size of the sheet, the arrangement of the title page, the general structure of the thesis, the character of the paper, and the binding must conform to definite standards.

A. *Size of sheet.* Size of sheet must measure $8\frac{1}{2}$ x 11 inches.

B. *Form of title page.* The title page must be arranged in this order:—

- a. Subject.
- b. Name of author.
- c. "Thesis submitted for degree of—."
- d. "Massachusetts State College, Amherst."
- e. Date.

and should be distributed over the page as artistically as possible.

C. Following the title page, the arrangement may take such form, variable of course with the subject matter, as is illustrated below:—

- a. An analytical outline of thesis.
- b. An introductory statement in which the purposes of the author are set forth.
- c. The body of the thesis composed of literature critically reviewed and deductions made, formulation of method of attack or procedure, and results secured. (All literature reviews and any work done by others should be so separated that no question can be raised as to which portion of the thesis represents the original investigation. It should be clearly kept in mind that *compilation* is not considered original investigation.)
- d. Summary and conclusions.
- e. Bibliography. (This should have the approval of the chairman of the thesis committee before final arrangement.)
- f. Acknowledgments.
- g. Statement of approval signed by members of the thesis committee.

D. *Paper.* See sample in College store.

E. *Binding.* See sample of binding in director's office.

8. All theses are the property of the College and subject to the will of the director of the Graduate School.

Agricultural Economics.

COURSES FOR MAJOR OR MINOR CREDIT.

110. I. ADVANCED ECONOMIC THEORY.—A study of the classical and neo-classical theories of value and distribution. Analysis of fundamental concepts and the relation of these to the current problems of production, distribution and exchange.

Credit, 3.

Professor LINDSEY.

111. THEORY OF AGRICULTURAL ECONOMICS. Readings in French, German, and English on economics of agriculture. Alternate years, odd, 200 hours.

Credit, 3.

Professor CANCE.

112. I. II. HISTORY OF ECONOMIC THOUGHT.—A general study of the development of economic thought from its ancient beginnings; the contributions of the various schools; recent changes in economic theory.

Credit, 2, per semester.

Professor LINDSEY.

115-116. CURRENT ECONOMIC PROBLEMS AND LITERATURE.—Department seminar throughout the year.

Credit, 1 each semester.

120. II. ECONOMIC HISTORY OF AGRICULTURE.—This course deals with the factors influencing the development of agriculture; agricultural problems and proposed methods of solution.

Credit, 2-3.

Assistant Professor JEFFERSON.

125-126. APPLIED ECONOMICS.—A course offered primarily for high school teachers, (others may elect) which is intended to appraise such current economic questions as the business cycle, taxation, banking, international trade reparations, economic planning and similar problems in the light of economic principles.

Credit, 2-3.

Miss FOLEY.

131. **I. PROBLEMS OF PRODUCTION.**—A presentation of the industrial relationships and the principles upon which the production of economic goods is based. May be taken in connection with Course 51.

Credit, 3-5.

Professor CANCE.

140. **PRINCIPLES AND PROBLEMS OF LAND ECONOMICS.**—This course deals principally with the characteristics and classification of land, present and future uses of land, private property and the control over property, land income and the value of land.

Credit, 2-3.

Professor ROZMAN.

145. **LABOR PROBLEMS.** Reading and investigation. By arrangement.

Credit, 3.

Professor CANCE.

150. **AGRICULTURAL COMMERCE, INDUSTRY AND TRADE.**—A study of trade movements and commercial activities relating to agricultural products. By arrangement.

Credit, 3-5.

Miss FOLEY.

155. **I. MARKETING AND MARKETING PROBLEMS.**—A study of the forces and conditions which determine prices and the mechanism, methods, and problems concerned with transporting, storing, and distributing goods. May be taken in connection with Course 53.

Credit, 3.

Professor CANCE.

156. **SPECIFIC PROBLEMS IN MARKETING FARM PRODUCTS.**—Reports and discussions. Alternate years, odd.

Credit, 3.

Professor CANCE.

161. **I. PRINCIPLES AND METHODS OF STATISTICS.**—Methods of collecting, analyzing, interpreting and presenting statistical information. The application of statistical methods to the fields of agriculture, economics, education, business, and industry is emphasized through practical laboratory problems.

Credit, 3.

Professor LINDSEY.

162. **II. ADVANCED STATISTICS.**—This course deals with the use of statistics in the analysis of economic data with special emphasis upon prices; the use of multiple correlation methods in the study and analysis of prices of agricultural and certain other commodities.

Credit, 3.

Professor LINDSEY.

164. **II. SPECIFIC PROBLEMS IN STATISTICS OF AGRICULTURE.**—Application of statistical analysis to specific problems in agricultural production and prices. Even years.

Credit, 3.

Professor LINDSEY.

166. **II. PRINCIPLES OF TRANSPORTATION.**—The development of highway, waterway, and railway transportation, and its relation to the development of the country; the principles governing the operation and control of transportation agencies; present-day problems. Lectures, text, and field work.

Credit, 3.

PROFESSOR CANCE.

167. **SPECIFIC TRANSPORTATION PROBLEMS.**—Original study, reading, and reports on certain transportation problems related to agriculture. Alternate years, odd.

Credit, 3-5.

Professor CANCE.

170. **II. THE FUNDAMENTALS OF COÖPERATION.**—History, principles, and business relations. (1) A Survey of the development, methods, and economic results of farmers' organizations and great coöperative movements; (2) the organization of producers and consumers abroad, and the present aspects and tendencies in the United States; (3) the principles underlying successful coöperative endeavor and practical working plans for coöperative associations.

Credit, 3.

Professor CANCE.

171-172. **SPECIAL PROBLEMS IN COÖPERATION FOR ECONOMIC PURPOSES.**—Study, original investigation, and discussion. Every third year, beginning 1933.

Credit, 3-5.

Professor CANCE.

174. II. ADVANCED BUSINESS ACCOUNTING.—This course covers the problems of corporation accounting and accounting for coöperative organizations. Considerable time is spent on problems in amortization, depreciation and the preparation, analysis and interpretation of financial statements. Credit, 3.

Professor LINDSEY.

175. II. AGRICULTURAL CREDIT AND THE ACQUISITION OF FARM LAND.—A study of the development, use, functions and operations of public and private credit institutions which are available for agricultural purposes. Special emphasis is given to the theory and use of credit. Credit, 3.

Professor LINDSEY.

185-186. ECONOMIC INSTITUTIONS AND PRACTICES IN RELATION TO THE STATE.—Studies in farm relief measures, taxation, bounties, subsidies, government control of commerce and industry. Credit, 2-5.

Professor CANCE.

190-195. INVESTIGATIONS IN VARIOUS PROBLEMS RELATED TO AGRICULTURAL ECONOMICS.—Credits to be determined by time spent and reports submitted.

200. THESIS.—Research work in agricultural economics will be developed by four principal methods; namely: historical, statistical, accounting, and general field investigation. In all instances mastery of research methods includes facility in investigation, tabulation, and interpretation of results.

COURSES FOR MINOR CREDIT ONLY.

55. I. ECONOMICS OF CONSUMPTION.—The purpose of this course is a consideration of the importance of consumption in modern industry and commerce. It includes a study of the laws of consumption, standards of living, sources and factors determining family incomes, and of the administration of these incomes as shown by the expenditures of the nation and of various groups. The relation of consumption to the problems of population and to the development of society is also studied. Lectures, assigned readings, and class discussions. Credit, 3.

Miss FOLEY.

84. II. RURAL AND BUSINESS LAW.—Land, titles, public roads, rights incident to ownership of livestock, contracts, commercial paper, and distinctions between personal and real property. Text, written exercises, lectures, and class discussions. Credit, 3.

Mr. SMART.

77. I. ECONOMICS OF FOREIGN TRADE.—A study of the principles and practices of international trade, including a survey of historical trends of the foreign trade of the United States, particularly with reference to agricultural products; the business methods of foreign traders, foreign exchange; and the efforts made by governments and business groups to influence foreign trade. Textbook, lectures, class discussions and class trip to Boston at an estimated expense of twelve to fifteen dollars. Credit, 3.

Miss FOLEY.

81. I. ELEMENTARY BUSINESS ACCOUNTING.—This course aims to give the student an elementary working knowledge of the principles underlying the accounting system in the gathering, analysis, and interpretation of accounting data and the methods used in accounting and preparing the usual types of business statements for individual proprietorship businesses and partnerships. The use of accounting records as a means of business control, which is emphasized in the course, should be of special value to those students who will later be employed in managerial capacities. Credit, 3.

Professor LINDSEY.

Agronomy.

COURSES FOR MAJOR OR MINOR CREDIT.

110. STUDIES IN THE CULTURE OF FIELD CROPS.—Laboratory, field, or other problems concerning the tillage of field crops. Credit, 1-10.

115. THE FERTILIZATION OF FIELD CROPS. Credit, 1-10.

120. **STUDIES IN HARVESTING AND STORAGE.**—Problems of method and time of harvesting and methods and conditions of storage, in relation to the keeping of field crops. Credit, 1-10.
125. **THE IMPROVEMENT OF FIELD CROPS.**—Readings, discussions, laboratory or field work in the improvement of field crops by breeding and selection. Credit, 1-10.
130. **TECHNOLOGY OF FIELD CROPS.**—The classification, grading, processing, and utilization of field crops. Credit, 1-10.
135. **NUTRITION OF FIELD CROPS.**—Readings, laboratory and greenhouse work on problems of nutrition. Credit, 1-10.
136. **GRASSES.**—Studies in the history, distribution, characteristics, commercial uses, and nutrition of grasses. Credit, 1-6.
137. **FINE TURF CULTURE.**—Laboratory and field studies in the establishment and culture of turf grasses. Credit, 1-6.
140. **—SOIL CLASSIFICATION.**—Laboratory, field, and library studies of methods and the principal groups, series, and types of soils. Credit, 1-10.
145. **STUDIES IN SOIL PHYSICS.**—Problems concerning texture, structure, and other physical properties of soils. Credit, 1-10.
150. **MOISTURE RELATIONSHIPS IN SOILS.**—Readings and problems concerning the soil and moisture in their various relations. Credit, 1-10.
155. **STUDIES IN SOIL MANAGEMENT.**—Study of a wide range of problems arising in the management of soils for crop production. Credit, 1-10.
160. **SOIL TECHNOLOGY.**—Includes studies of properties, behavior, and technical utilization of soils. Credit, 1-10.
163. **CHEMISTRY OF THE SOIL.**—Includes chemical studies of availability of nutrients, base-exchange studies, etc. Credit, 1-10.
165. **SOIL REACTION STUDIES.**—Studies of hydrogen-ion concentration of soils as affected by natural agencies and conditions induced by practices of soil management. Credit, 1-10.
170. **STUDIES OF SOIL FERTILITY.**—Investigation of the factors and conditions affecting the productivity of soils. Credit, 1-10.
175. **ORGANIC MATTER OF THE SOIL.**—Includes studies of the origin, properties and methods of maintenance of soil organic matter, and its physical and biochemical relations to soil fertility. Credit, 1-10.
180. **FERTILIZER TECHNOLOGY.**—Studies of the properties and behavior of fertilizer materials when unmixed with the soil. Credit, 1-10.
185. **FERTILIZERS AND THE SOIL.**—Concerning the interrelationships of soils and fertilizers when mixed. Credit, 1-10.
190. **STUDIES IN LITERATURE.**—Practice in preparing abstracts and summaries of the literature bearing on selected topics. Credit, 1-10.
200. **THESIS.**—For students taking major work in Agronomy. Credit, 10-20.

Animal Husbandry.

COURSES FOR MAJOR OR MINOR CREDIT.

100. **ADVANCED BREED HISTORY.**—Special study of the genetic and historical foundations of any modern breed of livestock and its developmental trends, accomplishments, and present status. Credit, 10.
110. **NUTRITION OF FARM ANIMALS.**—An advanced course dealing with the nutritional physiology of animals and the chemistry of metabolism. Special emphasis is laid upon the rôle of proteins, minerals, and vitamins in the efficient production of animal products. Credit, 10.
120. **BREEDING OF FARM ANIMALS.**—An advanced course dealing with the physiology of reproduction in domestic animals and with the laws of inheritance as evidenced through the various systems of breeding. The working of Mendelian principles in domestic animals is carefully considered. Credit, 10.

200. **THESIS.**—Research work in Animal Husbandry may consist of historical studies of the modern breeds of livestock, experimental studies in animal nutrition and in breeding. Credit, 15-18.

COURSES FOR MINOR CREDIT ONLY.

50. **I. THE NUTRITION OF FARM ANIMALS.**—This course is planned to acquaint the student with the chemistry and physiology of digestion, assimilation and work, meat, wool or milk production. The feed requirements of the various classes of livestock in terms of energy, proteins, minerals and vitamins are ascertained, as well as the rôle of the various roughages, concentrate and by-product feeds in meeting these requirements. Credit, 3.
3 class hours.

51. **THE BREEDING AND IMPROVEMENT OF FARM ANIMALS.**—This course is planned to acquaint the student with the facts of reproductive physiology, with the facts and theories of modern genetics and to show how such knowledge may be utilized for the creation of more beautiful and more efficient animal types. Credit, 3.
3 class hours.

52. **MEAT AND MEAT PRODUCTS.**—This course deals with the manufacture of animals into their various commercial products and the distribution of these products to the consumer. Practice is given in the slaughtering of beef cattle, hogs, and sheep; judging of carcasses; cutting and curing of meats. The practical work is augmented by studies in the grading of fat stock, in packing-house methods, in the magnitude and trends of the meat industry, and in the opportunities of local New England marketing. Credit, 3.
1 class hour.

53. **BEEF AND SHEEP PRODUCTION.**—Same as 75 below but applied to Beef Cattle and Sheep Production. Credit, 3.
2 class hours.

75. **HORSE AND SWINE PRODUCTION.**—The purpose of this course is to seek the solution of the various economic, nutritional, genetic and managerial problems concerned in the production of horses and swine. The student is called upon to utilize the scientific principles of feeding, breeding, etc., which he has mastered in his first three years of college work in solving the manifold problems concerned in successful livestock production. Credit, 3.
2 class hours.

77. **DAIRY CATTLE AND MILK PRODUCTION.**—Same as 75 above but applied to Dairy Cattle and Milk Production. Credit, 3.
2 class hours.

81-82. **ANIMAL HUSBANDRY SEMINAR.**—Students will prepare original papers and talks on various pertinent topics. Round table discussions of animal husbandry investigational work and practices will be conducted. Credit, 1.
1 class hour.

Bacteriology and Physiology.

COURSES FOR MAJOR OR MINOR CREDIT.

100. **HISTORY OF BACTERIOLOGY.**—Studies in the development of bacteriology from the late seventeenth century to the present time, especially planned to show the developments of bacteriology in relation to agriculture, public health, the arts, industry, and medicine. Credit, 1-5.

120. **PHYSIOLOGY OF BACTERIA.**—Lectures and laboratory on the nature of the bacterial cell and on nutrition and metabolism with emphasis on certain fundamental aspects of physiological processes and activities. Designed for students specializing in bacteriology and open to others who have sufficient chemistry, general biology, and botany. Credit, 2-5.

130. **SOIL BACTERIOLOGY.**—Accurate applications of microchemical methods are demonstrated. Biochemical and biophysical methods for measuring the physiological activities of soil microorganisms are studied. Nitrification, denitrification, and ammonification will be discussed in relation to their influence on soil fertility. Credit, 5-10.

140. **DAIRY BACTERIOLOGY.**—Technical procedures used in establishing sanitation in relation to milk production and supply will be discussed. Modern methods involved in the preparation, control, and preservation of milk and dairy products are studied. Credit, 5-10.

150. **FOOD BACTERIOLOGY.**—Principles of food preservation and conservation; the application of scientific methods to the understanding of food fermentations and spoilage will be considered. This is arranged primarily for students with an excellent background in both chemistry and bacteriology. Credit, 5-10.

160. **HYGIENIC BACTERIOLOGY.**—Special consideration given to organization of disease control campaigns, laboratory management, the relationship of serology, immunology, and bacteriology to municipal, rural, and community health. Bacteriological, immunological, and serological procedures will be presented, and there will be discussion of problems showing their use for improving the condition and environment for human and animal life. Credit, 5-10.

85. **BACTERIOLOGY. (SEROLOGY.)**—This course aims to supplement Bacteriology 52 and is planned to complete work essential for the advanced study in bacteriology and physiological science. This course includes the study, preparation, and standardization of such biological products as antigens, agglutinins, precipitins, hemolysins and complement-fixation bodies, and the use of the same in differential bacteriology and disease diagnoses. Consideration is also given to isohemagglutins and their relation to human blood groups. Class limited to ten students. First semester.

Prerequisite, Bacteriology 52.

2 3-hour laboratory periods, credit, 3.

PHYSIOLOGY.

75. **PHYSIOLOGY.**—The object of this course is to establish a broad basis for physiological study. The study and use of instruments is emphasized. The correlation of physics, chemistry and biological science to the interpretation of functional activities is particularly considered. Aspects of nerve-muscle physiology, hemodynamics, alimentation, intermediate metabolism, and the general plan and structure of the body pertaining to each division of the work will be considered. First semester.

2 class hours.

1 2-hour laboratory period, credit, 3.

76. **PHYSIOLOGY.**—Physiology of internal and external respiration including studies on calorimetry and basal metabolism. This will be followed by work upon the physiology of excretion. An introduction to the physiology of the special senses will be presented. This course is especially planned for students with a broad training in biological subjects. Second semester.

2 class hours.

1 2-hour laboratory period, credit, 3.

Prerequisite, Physiology 75.

Botany.

COURSES FOR MAJOR OR MINOR CREDIT.

100. **PLANT PHYSIOLOGY.**—The lectures will consider, under the nutrition of the plant: its chemical structure, absorption of various nutrient substances and their changes in the plant, assimilation and dissimilation of carbon and nitrogen by autotrophic and heterotrophic plants; under changes in the form of plants: growth and form under constant external factors, the influence of variable external and inner factors on growth, form, and development; and under plant movements: the various tropisms, mutations, etc. Supplemental demonstrations, laboratory work, and reading. One lecture a week for 2 semesters. Credit, 2.

101. **PLANT PATHOLOGY.**—A general consideration of the history, nature, and causes of plant disease; parasitism, predisposition, immunity, degeneration, natural and artificial infection, dissemination, epidemics, biologic strains, monstrosities and malformations, proliferation, prevention and control, economics of plant diseases. Supplemental reading and reports. One lecture a week for 2 semesters. Credit, 2.

102. **PLANT INHERITANCE.**—This course is planned to give the student a comprehensive understanding of the principles and facts of plant inheritance. A

170. PHYSIOLOGY, HUMAN OR ANIMAL.--Study of the physiology of the circulation with special reference to intermediate metabolism; to be followed by a course on the physiology of excretion. This course in physiology may be considered from the standpoint of human or animal physiology, according as the student may elect. Credit, 6-10.

190. LECTURES AND STUDY OF LITERATURE. Credit, 1 each term.

200. THESIS.--Some bacteriological problem related to agriculture, food, or public health. Distributed as may be most beneficial for research work. Time and credit by arrangement. Credit, 15-30.

COURSES FOR MINOR CREDIT ONLY BACTERIOLOGY

31. INTRODUCTORY AND GENERAL BACTERIOLOGY.--Designed to make microorganisms real and significant. The laboratory covers the use and proper care of the compound microscope, the preparation of culture media, methods of sterilizing equipment, the isolation and handling of pure cultures, simple and differential staining, studies on classification and cultural and biochemical studies on type species of pathogenic and non-pathogenic bacteria. Individual practice in the isolation and identification of bacterial forms is a required part of the laboratory assignment. The course aims to provide a basis for bacteriological study and interpretation and to furnish such material as will be valuable in understanding agriculture, domestic science, and public health problems. First term. 2 3-hour laboratory periods, credit, 3.

52. ADVANCED BACTERIOLOGY.--A continuation of Course 31. The identification and differentiation of bacterial species by morphological, cultural, physiological and serological studies. The combined courses give to the student not only a comprehensive picture of various forms of existing bacteria but develop a specialized technique for their cultivation, isolation, and identification. Second Term. 2 3-hour laboratory periods, credit, 3.
Prerequisite, Bacteriology 31.

61. BACTERIOLOGY. (PUBLIC HEALTH.)--Considers the relation of the human body to its environment in the maintenance of health and the production of disease. The administration and organization of community health, the prevention or control of animal or human diseases of public health significance, are considered. A study of special community health problems and the relationship of these problems to social welfare is discussed. First semester. 2 class hours, credit, 2.

62. BACTERIOLOGY. (PUBLIC HEALTH.)--Sanitation and its relation to agriculture, industry and public health. The microbiological features of air, water, soil, sewage, and refuse; industrial hygiene and the control of municipal and rural sanitary projects are considered. Second semester. 2 class hours, credit, 2.
Prerequisite, Bacteriology 31 or 61.

81-82. APPLIED BACTERIOLOGY.--These two courses covering a full year's work are designed to give the student a working knowledge of present day applied bacteriology. The work in the laboratory is presented in three distinct sections: (1) soil, (2) food, (3) dairy. In soil, such subjects as the number and development of microorganisms in different soils, factors influencing their growth and activity, and changes wrought upon matter in the production of soil fertility, ammonification, nitrification, etc., receive attention. In food, a study of preservation, fermentation, spoilage, and methods of sanitary examination are considered. In dairy, emphasis is placed upon modern methods for examining the sanitary quality of milk and milk products. Groups of bacteria normally present, abnormal and normal fermentations, effect of temperature, and the role of milk in the transmission of disease, are some of the subjects receiving special consideration. First Semester, 81. Second Semester, 82. 2 3-hour laboratory periods, credit, 3.
Prerequisite, Bacteriology 31.

study is made of plant variations, Mendel's law of heredity, the physical basis of heredity as established by chromosome behavior, pure lines, mutations, species, graft hybrids, etc. One lecture a week for one semester. Credit, 1.

103. BIOLOGIC RELATIONS.—Consideration of certain phases of the morphological and physiological adaptations of plants with regard to insect visits; the rôle of thorns, hairs, tendrils, glands, etc. One lecture a week for one term. Credit, 1.

105. PHYSIOLOGICAL PLANT PATHOLOGY.—This course considers those plant diseases not due to bacterial or fungous parasites, but resulting from unfavorable physical or chemical conditions of the soil; from harmful atmospheric influences, such as dry air, excessive moisture, hail, wind, lightning, frost; from injurious gases and liquids; from lack of or too much light; from wounds. A knowledge of the normal physiology of the plant is required. Demonstrations and assigned readings. One lecture a week for one semester. Credit, 1.

106. HISTORY OF BOTANY.—An historical survey of the science; lives of noted botanists; history of certain culture plants, such as wheat, corn, coffee, potato, rice, and their influence on civilization; reading. By arrangement. Credit, 2.

107. METHODS IN DRAWING AND PHOTOGRAPHING FOR THESIS AND PUBLICATION.—One semester. Credit, 1-2.

110. SYSTEMATIC MYCOLOGY.—Morphology and development of typical species representing the orders and families of fungi; practice in identification, collection and preservation of fungi; systems of classification; collateral reading. 1 class hour, 2 2-hour laboratory periods, one, or two semesters, credit, 3-6.

111. ADVANCED PLANT PHYSIOLOGY.—The work offered in this course is arranged to meet individual needs. Botany 77-78 or their equivalent are prerequisite. Credit, 5-15.

112. ADVANCED PLANT PATHOLOGY.—The work offered in this course is arranged to meet individual needs. Botany 75-76 or their equivalent are prerequisite. Credit, 5-15.

190. COLLATERAL READING.—Extensive reading of botanical literature in English, German and French, designed to give the student a broad knowledge of the science, is required of all major students. Final examinations are based in part upon this reading course. Credit, 5-10.

200. THESIS.—Each major student is required to select a problem in plant pathology or physiology (in other branches at the discretion of the department) for original investigation, and the thesis must embody a distinct contribution to knowledge. The thesis work counts for not more than 50 per cent of the total number of major credits required for either degree.

COURSES PRIMARILY FOR MINOR CREDIT.

57. MICROTECHNIQUE.—A course in the preparation of microscopic mounts including the celloidin and paraffin methods and involving the use of microtomes and of differential stains. 2 2-hour laboratory periods, for one semester, credit, 2.

59-60. SYSTEMATIC BOTANY OF THE HIGHER PLANTS.—Study of gymnosperms and angiosperms. Lectures deal with the interrelations of the flowering plants and with their ecology, distribution, and economic importance. Laboratory work consists of a critical study of types from the most important natural plant families. Particular emphasis is laid on the flora of Massachusetts. The department herbarium and greenhouses supply material of important tropical forms for study. 2 class hours. 1 2-hour laboratory period, for two semesters, credit, 6.

61-62. THE COMPARATIVE ANATOMY OF GREEN PLANTS.—In the lectures study is directed to the comparative anatomy of green plants from the evolutionary standpoint. Particular emphasis is laid upon the woody forms both living and extinct. Of the latter, the department is fortunate in possessing excellent sets of micro-preparations and lantern slides. 2 class hours. 1 2-hour laboratory period, for two semesters, credit, 6.

75-76. PLANT PATHOLOGY.—Comprehensive study of diseases of plants; training in laboratory methods and technique, including culture work and artificial

inoculation of hosts; miscellaneous diagnosis; study of literature and representative life histories of pathogens. Prepares for civil service, experiment station, and college work.

1 class hour.

4 2-hour laboratory periods, for two semesters, credit, 10.

77-78. **PLANT PHYSIOLOGY.**—Study of the factors and conditions of (a) plant nutrition, including the taking up of water and mineral substances, the assimilation of carbon and nitrogen, and the release of energy due to the processes of dissimilation; (b) plant growth, including the influence of internal and external factors on growth, the development of reproductive and vegetative organs; (c) plant movements, including those due to the taking up of water, and those of both motile and fixed forms in response to external stimuli. Weekly conferences are held, at which students report on assignments to original sources in the literature.

2 class hours.

3 2-hour laboratory periods, for two semesters, credit, 10.

81. **PLANT ECOLOGY.**—Study of plants in relation to their environment, with special emphasis on the newer field studies, which have given increasing insight into the physical and chemical factors as they influence growth and development in the field and the adaptability of plants to changes in their normal environment. The various types of plant formations and successions are studied, as well as the mutual and antagonistic relations of certain plants.

1 class hour.

1 2-hour laboratory period, for one semester, credit, 2.

Chemistry.

COURSES FOR MAJOR OR MINOR CREDIT.

101. **INORGANIC PREPARATIONS.**—Laboratory. The preparation of chemical products from raw materials. The manufacture and testing of pure chemicals. The laboratory work is essentially synthetic in nature, and is designed to aid in acquiring a more adequate knowledge of inorganic chemistry than is to be obtained by chemical analysis alone. Either semester.

Credit, 5.

Assistant Professor SEREX.

103. **ADVANCED ANALYTICAL CHEMISTRY.**—Laboratory. This course may be taken in part as follows: (a) electrolytic analysis; (b) ultimate analysis; (c) special analytical work to meet the needs of the individual student. In addition the following subjects may be taken, if desired: (d) fertilizers; (e) insecticides; (f) food analysis. Either semester.

Credit, 5.

Professor PETERS.

104. **ADVANCED PHYSICAL CHEMISTRY.**—Laboratory. Measurement of the electrical conductivity of solutions; degree of ionization; ionization constants; per cent hydrolysis of aniline hydrochloride from conductivity measurements; solubility product by the conductivity method; velocity of saponification by conductivity; neutralization point by conductivity; vapor pressure determinations; transport numbers; preparation and properties of colloidal solutions; transition points by dilatometric method; heat of solution of ammonium chloride and potassium nitrate; absorption of iodine by charcoal; determination of hydrogen ion concentration. To each student separate work will be assigned. Either semester.

Credit, 5.

Assistant Professor SEREX.

105. **ADVANCED ORGANIC CHEMISTRY.**—Laboratory. The preparation of compounds not included in Courses 51, 52, such as the Kolbe synthesis of salicylic acid; benzophenone and Beckmann's rearrangement; rosaniline, malachite green, Congo red, indigo, and other dyes; synthesis of fructose; Grignard reaction. To each student separate work will be assigned. Either semester.

Credit, 5.

Professor CHAMBERLAIN.

106. **ADVANCED BIOLOGICAL CHEMISTRY.**—Laboratory. An intensive study of special compounds, or processes, involved in the growth or metabolism of either plants or animals, under either normal or pathological conditions. To each student separate work will be assigned. Either semester.

Credit, 5.

111. ADVANCED GENERAL CHEMISTRY. (1933-34).—Lectures and collateral reading. A general survey of fundamental theories and recent advances in analytical, biochemical, inorganic, organic and physical chemistry. First semester.

Credit, 3.

Professors CHAMBERLAIN and PETERS;
Assistant Professors SEREX and FESSENDEN.

113. ADVANCED GENERAL CHEMISTRY. (1934-35).—Lectures and collateral reading. Similar to Course 111, but covering other phases of the different fields. First semester.

Credit, 3.

Professors CHAMBERLAIN and PETERS;
Assistant Professors SEREX and FESSENDEN.

114. SEMINAR.—Conferences, reports, or lectures. Each semester, once a week.

Credit, 1.

Professor CHAMBERLAIN.

175. PHYSICAL CHEMISTRY.—Lectures and laboratory work. First semester.

Credit, 5.

Assistant Professor SEREX.

179. PHYSIOLOGICAL CHEMISTRY.—Lectures and laboratory work. First semester.

Credit, 5.

Mr. PARROTT.

186. THEORETICAL CHEMISTRY.—3 lecture hours. Second semester.

Credit, 2.

Professor PETERS.

187. HISTORY OF CHEMISTRY. Second semester.
3 class hours.

Credit, 2.

Professor CHAMBERLAIN.

200. THESIS.—Research, and, in the case of a degree, the preparation of an acceptable thesis in agricultural, analytical, organic, physiological, or physical chemistry, under the direction of the professor in charge of the work. Credit determined by work done.

COURSES FOR MINOR CREDIT ONLY.

51, 52. ORGANIC CHEMISTRY.—Lectures and laboratory work. A year course.
5 credits each semester.

Professor CHAMBERLAIN.

61, 62. QUANTITATIVE ANALYSIS.—Lectures and laboratory work. A year course. 5 credits each semester.

Professor PETERS.

Dairy Industry.

COURSES FOR MAJOR OR MINOR CREDIT.

101. HISTORY AND DEVELOPMENT OF DAIRYING.—A review of the early history of dairying and factors in the industry contributing to its present development.

Credit, 3-10.

102. ICE CREAM PROBLEMS.—A study of existing scientific, technical, and marketing problems in the field of ice cream making.

Credit, 2-10.

103. MARKET MILK PROBLEMS.—Consideration of production, processing, and distribution of milk, the nutritional value of milk, chemical and bacteriological aspects of milk handling.

Credit, 2-8.

104. SURPLUS MILK PROBLEMS.—The economical disposal of seasonal surpluses through cheeses, butter, milk drinks, etc.

Credit, 2-8.

105. DAIRY PLANT MANAGEMENT.—The selection, construction, and arrangement of dairies and dairy machinery, and economical operation of same.

Credit, 2-8.

195. SEMINAR.

Credit, 1-2.

196. SEMINAR.

Credit, 1-2.

200. THESIS.—Original research work having a bearing on some important problem in dairying.

Credit, 15-18.

COURSES FOR MINOR CREDIT ONLY.

53. **MARKET MILK.**—A study of the various phases of the market milk industry: sanitary production, transportation, pasteurization and handling in the city plant, marketing, delivery systems, milk and its relation to public health, inspection, milk laws, food value, and advertising. Cultured milk and other milk drinks also are included. Some milk plants are visited. Credit, 4.

76. **BUTTER AND CHEESE MAKING.**—The first half of the semester is devoted to butter making, the remainder to cheese making, condensed and powdered milks. The various phases of the butter industry studied are: separators and cream separation; pasteurization, neutralization, and ripening of cream, preparation of starter cultures; churning, marketing, and scoring of butter; creamery management. The work in cheese making includes cheddar, cream, neufchatel, cottage, processed cheeses, etc. The manufacture of condensed and powdered milk, and commercial casein is also covered. Credit, 5.

78. **DAIRY CHEMISTRY.**—The various physical and chemical properties of milk, milk products, and their components are studied. Testing and control methods commonly used commercially for milk and dairy products are included; moisture and fat determinations, casein, salt, and acid tests, work with the Mojonnier apparatus, and other applied chemical tests are taken up in the laboratory. Credit, 3.

79. **ICE CREAM MAKING.**—The course includes a study of the principles and practices of ice cream making. The effects of such factors as composition, quality, pasteurization, homogenization, aging, and freezing on the finished product are considered. Sherbets, ices, fancy and individual forms, and all flavors of ice cream are studied. Some time is devoted to refrigeration machinery, delivery equipment, and merchandizing methods as they are related to the industry. Credit, 4.

80. **SEMINAR.**—The course consists of a study of research done by the experiment stations, also a review of foreign literature. Students prepare papers on timely dairy subjects. Frequent addresses are made to the class by visiting authorities in dairying. Credit, 1.

81. **SEMINAR.**—Continuation of above.

Credit, 1.

Education.

COURSES FOR MAJOR AND MINOR CREDITS WITH MAJOR ENROLLMENT IN EITHER GROUP OF SUBJECTS.

Education.

Courses for satisfaction of a minor may be selected from the undergraduate list in the annual college catalogue, except those numbered 51 and 65, provided prerequisites have been satisfied.

102. **II. THE DEVELOPMENT OF PUBLIC EDUCATION IN MASSACHUSETTS.**—The origin and growth of all types of education under public control from earliest colonial days to the present, with legislation, policies and persons involved.

Given 1933-34 and alternate years.

Credit, 2.

Professor WELLES.

103. **PROBLEMS IN VOCATIONAL TEACHING.**—The course deals with problems out of the experiences of vocational teachers in Massachusetts. Constructive assignments bearing upon individual experiences are worked out in harmony with the campaigns for better teaching in vocational schools. Credit, 2.

By arrangement.

Assisted by F. E. HEALD of Vocational Division, State Department of Education.

104. **PRINCIPLES OF VOCATIONAL EDUCATION.**—A survey of the objectives, history and legal requirements of vocational education in the United States.

Credit, 2.

By arrangement.

Assisted by F. E. HEALD of Vocational Division, State Department of Education.

105. ORGANIZATION AND ADMINISTRATION OF PUBLIC EDUCATION.—This is a study of all phases of public school work from the side of the administrator—principal or superintendent.

Credit, 2.

By arrangement.

Professor WELLES.

110. I. CONTEMPORARY EDUCATION.—Comparative studies of education involving European and United States systems.

Given 1934–35 and alternate years.

Credit, 2.

Professor WELLES.

137. I. SOCIALIZED EDUCATION.—Discussion of the objectives and the various factors involved in a system of education for increasing its social values. A view of education that tries to escape the effects of present idea of individualism.

Given 1933–34 and alternate years.

Credit, 2.

Professor WELLES.

145. II. CONFLICTING PRINCIPLES IN TEACHING.—A critical analysis of many dualisms in teaching principles in which there is an apparent conflict between two sound ones and an attempt to find the best way to capitalize the good of both.

Given 1934–35 and alternate years.

Credit, 2.

Professor WELLES.

168. I. HISTORY OF EDUCATION.—A survey of educational objectives and practices extending from early times to the present, emphasizing those movements that have most definitely influenced contemporaneous education in many countries.

Credit, 2.

By arrangement.

Professor WELLES.

178. AGRICULTURAL EDUCATION.—An opportunity offered occasionally to study this type of vocational education by participating in it. The work is that of an assistant teacher under supervision with a schedule of classes to teach and a prescribed line of study to complete.

Credit, 1–3.

By arrangement.

Assisted by F. E. HEALD of the Vocational

Division, State Department of Education.

183. SEMINAR IN EDUCATION.—Content determined on basis of experience and needs of students. Designed to cover important phases of school work not fully treated in listed courses. Examples: classroom management, supervision, general and special curriculum studies, special subject methods, school finances, school housing, secondary education, etc.

Credit, 1–5.

By arrangement.

Professor WELLES.

184. II. PROBLEMS IN SECONDARY EDUCATION.—A series of problems covering the important phases of secondary education to be worked out by study of a high school in action. Assigned readings are given to aid in the solution of the problems.

Credit, 2.

By arrangement.

Professor WELLES.

200. THESIS.—A completed piece of work on an accepted educational problem with necessary review of literature in its field. Required of all students for the advanced degree.

Credit, 5–10.

By arrangement.

Professor WELLES.

Psychology and Philosophy.

152. EXPERIMENTAL PSYCHOLOGY.—A survey of important experiments in psychology. Special attention will be given to the techniques of experimentation and to the apparatus employed. The content of the course will be determined partly by the interests of the members of the class.

Credit, 2.

By arrangement.

Professor DESILVA.

153. **I. SURVEY OF PSYCHOLOGY.**—A survey of the present status of the fields and schools of psychology. The principle methods of psychological research are outlined.

Credit, 2.

Professor DeSILVA.

154. **I. EDUCATIONAL PSYCHOLOGY.**—The course deals with the psychological facts and principles which are involved in the solution of various educational problems. An attempt is made to criticize and evaluate educational theory and practice and suggest methods for improvement.

Credit, 2.

Professor GLICK.

155. **THE PSYCHOLOGY OF THINKING.**—A consideration of the experimental work upon the higher thought processes, such as problem solving and creative imagination.

Credit, 2.

By arrangement.

Professor DeSILVA.

156. **RESEARCH IN EXPERIMENTAL PSYCHOLOGY.**—Arrangement may be made to carry out a research problem in phases of experimental psychology for which equipment and facilities are available.

Credit, 1-3.

By arrangement.

Professor DeSILVA.

161. **I. HISTORY OF PHILOSOPHY.**—A study of the development of Western thought in general from the time of the early Greeks up to the recent past.

Credit, 2.

Professor GLICK.

162. **II. CONTEMPORARY PHILOSOPHY.**—A study of the various current types of philosophy with emphasis upon evaluation and criticism.

Credit, 2.

Professor GLICK.

163. **II. PHILOSOPHY OF EDUCATION.**—A criticism and evaluation of the various theories and practices in education viewed in the light of historical perspective and present-day science and theory.

Credit, 2.

Professor GLICK.

185. **II. ABNORMAL PSYCHOLOGY.**—A study of the different types of disorders in human behavior relative to causes, classification, prevention, and treatment. A critical study is made of the various theories and practices of mental hygiene and psychiatry.

Credit, 2.

Professor DeSILVA.

186. **II. APPLIED PSYCHOLOGY.**—A study of the various applications of psychology in business, medicine, law, etc.

Credit, 2.

Professor DeSILVA.

188. **ETHICS.**—A critical study of the fundamental ethical theories and practices both of the past and present, with an attempt to evaluate each in the light of present knowledge and social demands.

Credit, 2.

By arrangement.

Professor GLICK.

189. **I. MENTAL TESTS.**—The history and theory of mental tests; principles of construction and administration; uses in education, industry, and the professions.

Credit, 2.

By arrangement.

Professor GLICK.

191. **RESEARCH AND STATISTICS.**—The principles and methods of research with special emphasis upon the technique used in psychology and education. Statistics are studied both from the standpoint of theory and application.

Credit, 2.

By arrangement.

Professor GLICK.

193. **GUIDANCE.**—A study of individual differences in regard to aptitudes and interests with the view of guiding children into activities where they will be most

efficient and contented. A study is made of the psychological devices used in measuring aptitudes and interests.

Credit, 2.

By arrangement.

Professor GLICK.

194. LOGIC.—A study of the laws and theories pertaining to the principles and methods of correct thinking.

Credit, 2.

By arrangement.

Professor GLICK.

196. SEMINAR IN PSYCHOLOGY.—Arranged to include phases of psychology not covered in the outlined courses and also to provide opportunity for greater specialization than the outlined courses may afford.

Credit, 2.

By arrangement.

Professor DESILVA.

197. SEMINAR IN PHILOSOPHY.—Arranged to include phases of philosophy not covered in the outlined courses and also to provide opportunity for greater specialization than the outlined courses may afford.

Credit, 2.

By arrangement.

Professor GLICK.

200. THESIS.—In either psychology or philosophy.

Credit, 5–10.

Professors DESILVA and GLICK.

Entomology, Zoölogy and Geology.

COURSES FOR MAJOR OR MINOR CREDIT.

Entomology.

(As these courses vary from a few exercises only to half a year or more, no fixed number of credits can be assigned to them.)

MORPHOLOGY.—101–120.

101. Embryonic development of insects and polyembryony.

Professor CRAMPTON.

102. Metamorphosis and its interpretations.

Professor CRAMPTON.

103. Advanced external and internal anatomy.

Professor CRAMPTON.

104. Insect histology and physiology.

Assistant Professor SWEETMAN.

105. Ancestry and development of insects, including fossil forms.

Professor CRAMPTON.

106. Hermaphroditism in insects.

Professor ALEXANDER.

107. Hybrids.

Professor CRAMPTON.

108. Parthenogenesis, pedogenesis, and heterogeny.

Professor CRAMPTON.

109. Chemistry and physics of insect colors.

Assistant Professor SWEETMAN.

110. Color patterns, their significance and value.

Assistant Professor SWEETMAN.

111. Luminosity.

Assistant Professor SWEETMAN.

112. Variation and teratology in insects.

Professor ALEXANDER.

ECOLOGY:—121–140.

121. Dimorphism and polymorphism.

Professor ALEXANDER.

122. Mimicry, including concealment, protective devices, and warning coloration.

Professor CRAMPTON.

123. Insect architecture.

Professor CRAMPTON.

124. Relation of insects to plant fertilization and its importance.

Professor CRAMPTON.

125. Insect products of value to man.

Professor CRAMPTON.

126. Geographic distribution and methods of distribution of insects, with consideration of life zones, barriers, etc.

Professor ALEXANDER.

127. Insect migrations.

Professor ALEXANDER.

128. Insect behavior.

Professor CRAMPTON.

129. Biological control of insect and plant pests.

Assistant Professor SWEETMAN.

130. Advanced ecology.

Assistant Professor SWEETMAN.

ECONOMIC ENTOMOLOGY.—141-160.

141. Chemical cultural and mechanical control of insects.

Assistant Professor SWEETMAN.

142. Insect photography and methods of preparing illustrations.

Assistant Professor SWEETMAN.

143. Field and insectary methods.

Assistant Professor SWEETMAN.

144. Legislation about insects.

Assistant Professor SWEETMAN.

SYSTEMATIC ENTOMOLOGY.—161-179.

161. History of entomology and of classifications.

Professor CRAMPTON.

162. Lives and works of prominent entomologists.

Professor ALEXANDER.

163. Abundance of insects; leading specialists in the various orders of insects.

Professor ALEXANDER.

164. Important collections, public and private; their location and their value.

Professor ALEXANDER.

165. Type categories; types of species; genotypes.

Professor ALEXANDER.

166. Rules of nomenclature and how they are used.

Professor ALEXANDER.

180. SEMINAR.—Reports on the current literature of entomology; special reports; monthly meetings (Fernald Entomological Club).

190. ADVANCED AND COLLATERAL READINGS.—The best articles on various topics in entomology are assigned for study, and the subjects are included in the final examinations.

200. THESIS.—Original research on one or several topics in morphology, ecology, economic and systematic entomology. This may require from one-half to two-thirds of the total working time of the student.

COURSES FOR MINOR CREDIT ONLY.

Entomology

INSECT TAXONOMY.—(Courses No. 55, 56, 76.)

Credit, 7.

INSECT MORPHOLOGY.—(Course 57.)

Credit, 3.

INSECT ECOLOGY.—(Courses 79, 80.)

Credit, 6.

INSECT PHYSIOLOGY.—(Course 75.)

Credit, 3.

FOREST ENTOMOLOGY.—(Course 52.)

Credit, 3.

MEDICAL ENTOMOLOGY.—(Course 54.)

Credit, 4.

APPLIED ENTOMOLOGY.—(Courses 53, 78.)

Credit, 4.

APICULTURE.—(Courses 65, 85, 56.)

Credit, 9.

Zoölogy.

COMPARATIVE VERTEBRATE ZOÖLOGY.—(Courses 65, 66.)	Credit, 6.
COMPARATIVE INVERTEBRATE ZOÖLOGY.—(Courses 69, 70.)	Credit, 6.
VERTEBRATE EMBRYOLOGY.—(Courses 75, 76.)	Credit, 6.
SPECIAL PROBLEMS.—(Courses 91, 92.)	Credit, 4 or 6.

Geology.

ELEMENTS OF PETROLOGY.—(Course 51.)	Credit, 3.
HISTORICAL GEOLOGY.—(Course 52.)	Credit, 3.
SPECIAL PROBLEMS.—(Graduate offerings only.) (Courses 101, 102.)	Credit, 3 or 6.

Floriculture.**COURSES FOR MAJOR OR MINOR CREDIT.**

A definitely outlined major or minor in floriculture is not catalogued at present but such a course may be arranged for individual students. The nature of the work to be taken up will depend upon the previous training and the type of problem desired by the candidate. Application should be made to the head of the Department.

150. CURRENT LITERATURE.—A review of scientific literature relating to floricultural practices, including various phases of greenhouse management, soils, fertilizers, plant propagation, insect pest and disease control, and other pertinent subjects. Credit, 3-6.

125. GARDEN MATERIALS.—Studies of specific plants or groups of plants which are used in gardening work. Questions concerning nursery methods of handling such plants are also included. Credit, 3-6.

175. COMMERCIAL FLORICULTURE.—Problems relating to factors concerned with the commercial production of flowers and plants under glass. Opportunity is also given for study of factors concerned with methods of distribution. Credit, 3-6.

179. CONSERVATORY PLANTS.—A consideration of subjects dealing with plant materials which are used primarily in conservatories for display purposes and in gardens in warmer climates. Credit, 3-5.

190. HISTORY OF FLORICULTURE AND FLORICULTURAL LITERATURE.—Consideration of men and events that have influenced the development of floriculture. Brief survey of floricultural literature. Required of all graduates in floriculture. Credit, 3-5.

200. THESIS.—For candidates taking major work in floriculture. Credit, 10-15.

COURSES FOR MINOR CREDIT ONLY.

51. GREENHOUSE MANAGEMENT.	Credit, 3.
52. FLORAL ARRANGEMENT.	Credit, 3.
75-76. COMMERCIAL FLORICULTURE.	Credit per semester, 3.
79. CONSERVATORY PLANTS.	Credit, 2.
81. HERBACEOUS GARDENS AND BORDERS	Credit, 3.
82. SEMINAR.	Credit, 3.

Forestry.**COURSES FOR MINOR CREDIT ONLY.**

59. FOREST ECONOMICS.—The use of land for forest purposes with especial reference to the small forests of New England. Individual problems with collateral reference reading. Credit, 3.

60. FOREST MANAGEMENT.—A study of the small unit forest of New England with especial reference to the determination of growing stock, improvement and economic utilization. Individual problems with collateral reference reading. Credit, 3.

61. **FOREST IMPROVEMENT THROUGH INTERMEDIATE CUTTINGS.**—A study of the silvicultural methods necessary to the cultivation and improvement of the small New England forest. Field work and collateral reading. Credit, 3.

Home Economics.

COURSES FOR MINOR CREDIT ONLY.

75. **HOME MANAGEMENT.**—A study of personal and family standards of living in the modern home, the economic relations of the household, and the use of time, energy, and money as a means to influence the home situation. Credit, 3.

80. **PROBLEMS OF THE FAMILY.**—This is a study of the problems of family life in relation to the modern social organization. This course aims to develop an intelligent social consciousness and a sense of individual responsibility in family relationships. Credit, 3.

83-84. **PROBLEMS IN HOME ECONOMICS.**—An application of home economics to special problems. One or two semesters. Credit, 3-6.

86. **CHILD CARE AND DEVELOPMENT.**—A study of the growth and development of the child, the care of children at various ages, treatment in behavior problems, and the influence of environment in shaping personality. Credit, 3.

87. **ADVANCED CLOTHING PROBLEMS.**—A study of advanced clothing problems with especial emphasis on economic problems involved. Costume designing and modeling are included which give opportunity for experimentation in designing. Credit, 3.

Horticultural Manufactures.

COURSES FOR MAJOR OR MINOR CREDIT.

101, 102. **FOOD INDUSTRY PROBLEMS.**—A series of problems, exercises and assignments covering a wide variety of subjects. Definite credit is assigned to each problem. Credit, 2-8.

111, 112. **SEMINAR.**—Literature assignments, preparation of reports, and round-table discussions. Credit, 1-2.

161. **I. FOOD TECHNOLOGY.**—Commercial practices. Advanced laboratory work in the manufacture of canned meats, marine products, vegetables, soups, pickled products, maple and table syrups, fountain syrups and carbonated beverages. Two 3-hour laboratory periods. Credit, 3.

162. **II. FOOD TECHNOLOGY.**—Commercial practices. Advanced laboratory work and lectures on such manufactured fruit products as jellies, jams, marmalade, pectin, juices and by-products. A study of chemical preservatives in foods. Food laws. Fermented foods and beverages. Refrigeration, freezing, drying and smoking as applied to food preservation and storage. One lecture, one 3-hour and one 2-hour laboratory period. Credit, 3.

200. **THESIS.**—Research on some suitable topic relating to the technology of foods. Facilities for nutrition research are provided by well-equipped chemical and small animal laboratories. Credit 15-18.

COURSES FOR MINOR CREDIT ONLY.

51. **I. FRUIT AND VEGETABLE PRODUCTS.**—This course, together with 52, gives the student a general elementary knowledge of the science and practice of food manufacture. Principles and theories of the various methods of food preservation are the basis for classroom exercises. The laboratory work during the first semester deals largely with the preservation of the autumn fruits and vegetables, small fruit products, freezing and dehydration. 1 class hour. 2 2-hour laboratory periods, credit, 3.

52. **II. MISCELLANEOUS PRODUCTS.**—This is a continuation of 51. The laboratory work includes pickles and pickle products, maple products, citrus products, fruit syrups, soups, condiments and the canning of meats, poultry, and the spring vegetables. 1 class hour. 2 2-hour laboratory periods, credit, 3.

61. **I. COMMERCIAL PRACTICES.**—A survey of commercial practices in the manufacture and preservation of food products. This will involve a study of equipment, factory arrangement, sanitation and government regulations, the operation of types of commercial equipment in quantity production.

1 class hour. 2 2-hour laboratory periods, credit, 3.
Prerequisites Horticultural Manufactures 51 and 52.

62. **II. FOOD PRESERVATION PROBLEMS.**—This is a continuation of 61. The class exercises will deal largely with a survey study of the sources of raw materials, commercial methods of manufacture, packing and distribution of the more common foods, also a study of the more important contributions of research. Laboratory work will include the formation of research projects, interpretation of research data. The use of preservatives, the simple analysis of foods and the commercial practices as applied to preservation of such materials as are available: fish, meats, poultry, and spring vegetables.

1 class hour. 2 2-hour laboratory periods, credit, 3.
Prerequisite 61.

Landscape Architecture.

COURSES FOR MAJOR OR MINOR CREDIT.

Courses 190 to 200 are given by arrangement, are largely devoted to individual work, and are available in either semester.

190. **THEORY.**—Special studies in the history and theory of art and of landscape architecture.

Credit, 2-10.

The DEPARTMENT.

191. **DESIGN.**—Individual problems in any or all branches of design, including estates, parks, playgrounds, public grounds, etc.

Credit, 2-10.

The DEPARTMENT.

192. **CONSTRUCTION.**—Individual problems by arrangement, including engineering, estimating, cost accounting, and methods of construction.

Credit, 2-10.

The DEPARTMENT.

194. **PRACTICE.**—Professional field work under supervision, conducted upon going projects as opportunity offers.

Credit, 2-10.

By arrangement.

The DEPARTMENT.

195. **SEMINAR.**—Regular meetings for conference.

Credit, 1-5.

Professor WAUGH.

196. **PRESENTATION.**—Studies in drafting, pen and crayon, rendering, water coloring, etc.

Credit, 2-5.

Assistant Professor ARMSTRONG and Mr. ROBERTSON.

197. **ARCHITECTURE.**—Problems in architecture.

Credit, 2-5.

Mr. ROBERTSON.

198. **CIVIC ART.**—Studies and problems in civic art, including city planning, country planning and subdivision, public policies, and administration in park and forest recreation, and landscape conservation.

Credit, 2-10.

Professor WAUGH.

200. **THESIS.**

Credit, 2-10.

Certain courses from the undergraduate curriculum are available to qualified students for major or minor credit, as follows:

175. **THEORY of LANDSCAPE ARCHITECTURE.**

Credit, 3.

Professor WAUGH.

176. **CIVIC ART.**

Credit, 3.

178. **HISTORY OF ARCHITECTURE.**

Credit, 3.

Professor HARRISON.

181. **ADVANCED DESIGN.**

Credit, 3.

182. RESIDENCE GROUNDS DESIGN.

Credit, 3.
Professor HARRISON.

183. CONSTRUCTION AND MAINTENANCE.

Credit, 3.
Professor HARRISON.

COURSES FOR MINOR CREDIT ONLY.

51. MAPPING AND TOPOGRAPHY.

Credit, 3.
Professor HARRISON.

52. ELEMENTS OF LANDSCAPE ARCHITECTURE.—Engineering details, grades, roads, drainage.

Credit, 3.
Professor HARRISON.

54. GARDEN DESIGN.—Elementary principles of structural design as applied to the simpler garden forms.

Credit, 3.
Professor WAUGH.

FOR THE DEGREE OF BACHELOR OF LANDSCAPE ARCHITECTURE

To receive the degree of Bachelor of Landscape Architecture each candidate will be required:

1. To have received the degree of Bachelor of Science or Bachelor of Art from a reputable institution.

2. To have completed as a prerequisite 24 semester credits in technical courses in landscape architecture, substantially equivalent to the technical courses now required in the major in landscape architecture at this college.

3. In addition, to have completed in residence at this institution 30 credits in landscape architecture and closely related subjects prescribed by the Department. (See Fifth Year Program below.)

4. To have maintained a standing of 70 or better in all courses of the Fifth Year.

5. To be able to speak and write good English.

6. To have received the unanimous approval of the faculty of the Department and the usual vote of approval of the faculty of the Graduate School.

FIFTH YEAR PROGRAM.

The regular program of studies for the Fifth Year, subject to minor changes, is as follows:

First Semester.

LANDSCAPE ARCHITECTURE 101.—General design and rendering.

LANDSCAPE ARCHITECTURE 103.—Ecology and physiography.

Professor WAUGH.

LANDSCAPE ARCHITECTURE 107.—Specifications, estimates, costs.

Professor HARRISON.

ARCHITECTURE 101.—Elementary problems.
English, assigned.

Mr. ROBERTSON.

Second Semester.

LANDSCAPE ARCHITECTURE 106.—History of Landscape Architecture.

LANDSCAPE ARCHITECTURE 110.—Planting design.

Professor HARRISON.

LANDSCAPE ARCHITECTURE 112.—Professional practice.

Professor WAUGH.

ARCHITECTURE 102.—Structural problems.
English, assigned.

Mr. ROBERTSON.

Note: Each course in this group is rated at 3 semester credits. Minor deviations from this program may be made at the discretion of the Department.

Mathematics.

COURSES FOR MINOR CREDIT ONLY.

75. **HYDRAULIC AND SANITARY ENGINEERING.**—Hydrostatics, theoretical hydraulics, orifices, weirs, pipes, conduits, water supply, hydraulic motors, sewers and sewage treatment. Credit, 5.

Professor OSTRANDER.

91, 92. **DIFFERENTIAL AND EMPIRICAL EQUATIONS.**—Courses dealing with the methods of solution of the simpler forms of differential equations and their applications to analogous operations in the applied sciences. Attention is also given to the various methods of determining empirical equations from observed data, and the interpretation of the various constants involved. Credit, 2-2.

Associate Professor MOORE.

Physics.

COURSES FOR MINOR CREDIT ONLY.

51, 52. **MAGNETISM, ELECTRICITY, PHOTO-ELECTRICITY, THERMIONICS, AND APPLICATIONS.**—Course 51 deals largely with direct currents, Course 52 with alternating currents, applications of thermionics, and photo-electricity. These courses are planned to give the student a good grounding in theory and methods of measurement in the subjects indicated, which are useful in many fields of investigation. Modern methods are stressed and instruments of precision are used.

2 class hours.

1 2-hour laboratory period, credit 3.

Professor POWERS.

Prerequisites, Physics 26 for Course 51; Physics 51 for Course 52, Math. 28.

53. **OPTICS.**—An intermediate course in the theory of light. Work in geometrical and physical optics is done. Precision instruments are used in the laboratory.

2 class hours.

1 2-hour laboratory period, credit 3.

Assistant Professor ALDERMAN.

Prerequisites, Physics 26, Math. 28.

54. **HEAT AND THERMODYNAMICS.**—A study of heat exchanges and energy changes due to heat in systems of matter. The subject material and experimental methods are useful in other branches of science.

2 class hours.

1 2-hour laboratory period, credit 3.

Assistant Professor ALDERMAN.

Prerequisites, Physics 25, Math. 28.

75, 76. **ADVANCED EXPERIMENTAL WORK IN SELECTED TOPICS.**—These courses are largely experimental, and the subject matter is adapted to the needs of the individual student. The research viewpoint is emphasized.

3 2-hour laboratory periods, credit 3.

Professor POWERS.

Prerequisites, Physics 25, 26, and 52; or 53 and 54; Math. 28 and 51.

85, 86. **MODERN PHYSICS.**—Typical subjects studied are theories of the atom, radiation, quantum theory, spectra, X-ray analysis.

3 class hours.

Credit 3.

Professor POWERS.

Prerequisites, Physics 25, 26, 51-54; or equivalent; Math. 28, 51.

Pomology.

COURSES FOR MAJOR OR MINOR CREDIT.

101. **EXPERIMENTAL METHODS.**—A critical study of the methods of research that have been used or may be helpful in pomological work. The following topics will be considered from the point of view of the investigator in pomology:—

1. Statistical methods.
2. Measures of growth and yield.
3. The conduct of plot experiments.
4. Methods of soil study in their relation to pomological research.

5. Chemical methods of pomological research.
6. Methods of physiology applicable to fruit plants.
7. Microchemistry.

Credit, 10-15.

102. **POMOLOGICAL RESEARCH.**—A critical survey of past and current research work in pomology. Semi-weekly meetings for reports and discussions will be held. The following topics will be taken up:—

1. Orchard soil management.
2. Soil fertility and fertilizers.
3. Physiology of pruning tree fruits and bush and vine fruits.
4. Fruit bud differentiation.
5. Sterility and fertility.
6. Genetics of fruit plants.
7. Climatology and winter injury.
8. Advanced morphology.
9. Spraying machinery and equipment.
10. Special practices.

Credit, 10-15.

103. **ADVANCED LABORATORY WORK.**—Each student will be required to become familiar with the research work of the department and to have a share in it. So far as this has value as graduate work, he will receive credit. Credit, 5-12.

104. **HISTORY OF POMOLOGY.**—The men, institutions, and other influences that have contributed to the development of the science and art of pomology.

Credit, 2-5.

105. **HORTICULTURAL TAXONOMY.**—A study of the history and development of plant classification with special reference to horticultural plants. A study of modern classification carries with it an expression of opinion as to the evolution of cultivated plants.

Credit, 2-3.

106. **ADVANCED SYSTEMATIC POMOLOGY.**—The principles of systematic pomology, including a study of nut and subtropical fruits not usually dealt with in undergraduate courses. Opportunity is also offered for study of leaf and general tree characters of nursery and orchard trees and the relationship of varieties as indicated by these characters as well as those of the fruit.

Credit, 6-10.

200. **THESIS.**—Each student will be required to carry out an original investigation of an assigned problem. In planning, executing and interpreting the data of this problem he must show marked ability. The results are embodied in a thesis to be passed upon by the Department and the Graduate Staff.

Credit, 20-30.

COURSES FOR MINOR CREDIT ONLY.

POMOLOGY 26. SMALL FRUITS.—A study of the growing of small fruits, including raspberries, blackberries, strawberries, currants, blueberries, and grapes, dealing with such questions as varieties, selecting a site for the plantation, soils, fertilizers, pruning, harvesting, marketing, etc.

2 class hours.

1 2-hour laboratory period, credit 3.

POMOLOGY 53. GENERAL POMOLOGY.—A study of the most improved practices in fruit production, including such questions as the selection of orchard sites and soils, laying out and setting the orchard, the structure and growth of fruit plants; the bearing habits, pruning and training of fruits; fertilizers, pollination, winter injury, etc.

2 class hours.

1 2-hour laboratory period, credit 3.

POMOLOGY 56. SPRAYING.—(a) Spraying materials, their composition, manufacture, and preparation for use; the desirable and objectionable qualities of each material; formulas used, cost, tests of purity. (b) Spraying machinery, including all the principal types of pumps, nozzles, hose and vehicles; their structure and care. (c) Orchard methods in the application of the various materials used, with the important considerations for spraying each fruit and for com-

bating each orchard pest. This course is designed especially to familiarize the student with the practical details of actual spraying work in the orchard.
1 class hour. 2 2-hour laboratory periods, credit 3.

POMOLOGY 75. SYSTEMATIC POMOLOGY (1934-35).—A study of the more important kinds and varieties of fruits grown in the United States, their relationships and nomenclature. Particular emphasis is placed on the identification, classification and value of varieties including a study of the characters of the plant as well as the fruit. Given in alternate years.
1 class hour. 3 2-hour laboratory periods, credit, 4.

POMOLOGY 77. COMMERCIAL POMOLOGY (1933-34).—The picking, handling, storing, and marketing of fruits, including a discussion of storage houses, fruit packages, and methods of refrigeration, grading and packing. This course also considers the leading American and foreign centers of fruit production as they affect our own fruit industry through competition here or abroad. Given in alternate years.
2 class hours. 1 2-hour laboratory period, credit 3.

POMOLOGY 81. ADVANCED POMOLOGY.—A consideration of the scientific principles governing the growth and behavior of fruit-bearing plants. Special attention is given to a critical survey of the more important research work in the field of Pomology.
2 class hours. 1 2-hour laboratory period, credit, 3.
Prerequisite, Pomology 53.

POMOLOGY 82. ADVANCED POMOLOGY.—A continuation of Course 81.
2 class hours. 1 2-hour laboratory period, credit, 3.
Prerequisite, Pomology 81.

POMOLOGY 83, 84. SEMINAR.—Advanced study of problems relating to the business of fruit growing. Each student is assigned a major problem in lines of work in which he is particularly interested. He pursues his studies both by reading and research, and the materials obtained will be worked into theses, which are presented to the seminar for discussion. No lectures are given, but seminar meetings are held for one period each week.
1 class hour. Credit, 1.

The DEPARTMENT.

Poultry Science.

COURSES FOR MAJOR OR MINOR CREDIT.

101. SCIENCE OF POULTRY HUSBANDRY.—A review of the entire field of poultry literature, including books, bulletins, journals, and other technical publications to furnish a comprehensive background of the present status of knowledge in poultry science. Written reports will be required.
Credit, 3-7.

102. POULTRY RESEARCH PROBLEMS.—A critical review of research, experimentation, and demonstration that has been carried out by workers at the various stations in this and other countries. A study of poultry problems in foreign countries together with the outstanding needs in the United States with a view of discovering the needs for fundamental research.
Credit, 3-7.

103. ADVANCED GENETICS.—A lecture course offered during both semesters dealing with the experimental study of genetics in relation to plant and animal breeding.
Credit, 3-6

104. INTERPRETATION OF DATA.—A complete analysis of available experimental data on various phases of poultry breeding is undertaken by the student. The student is required to make his own interpretations and to report the results of his analysis.
Credit, 3-7.

105. RESEARCH IN BREEDING.—Students may carry on definite experiments in poultry breeding. All research work will be confined to the field of pure and applied genetics. Problems concerned with both physical and physiological characters may be studied.
Credit, 10-12.

106. FEEDING AND NUTRITION.—A study of the relation of various feeds to the morphology and physiology of the fowl. Special attention is given to the effects

of various nutrients on growth, sexual maturity, egg production, character of plumage, and condition of flesh. Complete rations as well as methods of feeding are fully considered. Credit, 5-10.

107. **BROODING.**—Studies will be made upon the relation between viability and rate of growth and the following topics: type of brooder, number of chicks in brood, ventilation, humidity, sanitation, exercise, and weather conditions; also a comparison of natural methods with artificial methods of rearing chicks. Credit, 3-7.

108. **INCUBATION AND EMBRYOLOGY.**—A number of problems of a practical, scientific, and mechanical nature relating to incubation are considered. The work in embryology is of an advanced nature, dealing with its relation to morphogenesis and heredity, and presupposes an elementary knowledge of the embryology of the chick. Credit, 3-10.

109. **THESIS.**—Research work may be carried out in the following lines: breeding, nutrition, brooding and incubation, and embryology. Originality and thoroughness are particularly emphasized. Credit, 10-12.

COURSES OFFERED FOR MINOR CREDIT ONLY.

80. **POULTRY PROBLEMS.**—Open to seniors and graduate students. The course consists of problems chosen by the students under the guidance of the department. Credit, 1-4.

Sociology.

COURSES FOR MAJOR OR MINOR CREDIT.

151. **FORMS AND THEORIES OF GOVERNMENT.**—Theories of the origin and development of the state; history of the governments of Great Britain, France, Germany, Italy, and Spain as typical of the governments of western Europe; an examination of the constitutional governments recently set up in Europe. Credit, 3.

Professor MACKIMMIE.

152. **MODERN EUROPEAN HISTORY.**—A comprehensive view of the history of Europe as a whole from the Renaissance to the French Revolution with a more intensive study of certain selected periods. In this second aspect attention will be focused on social, intellectual, political, agricultural and economic elements which have entered into the development of civilization. Credit, 3.

Professor MACKIMMIE.

153. **CONTEMPORARY CIVILIZATION.**—Continues and completes the studies begun in Course 152. The general history of Europe from Napoleon to the close of the World War. Credit, 3.

Professor MACKIMMIE.

154. **CIVILIZATION AND CULTURE.**—A study of human social and cultural development, including agricultural, with reference to the sources of our knowledge; attention is given to the results of recent scholarship in this field. Credit, 5.

Assistant Professor CUTLER.

155. **HISTORY OF AMERICAN FOREIGN POLICY.**—A study of the chief problems in American diplomatic relations and the traditional policies evolved. Credit, 2 or 3.

Mr. CARY.

175. **SOCIAL REFORMS.**—An appraisal of present-day efforts to adjust our social conditions, in country and city, to the situation created by the industrial revolution; a study is made of recent literature on this subject. Credit, 5.

Assistant Professor CUTLER.

177. **SOCIOLOGICAL SURVEYS.**—The survey in actual practice; the bird's-eye view; the segmental survey; measurement; causation; reporting and publishing the findings. Credit, 3.

Assistant Professor CUTLER.

178. FIELD WORK OF AN INVESTIGATIONAL NATURE.—Research methods employed by sociologist—measurements, exploration, criticism, surveys; scientific value of the representative sample; quantitative measurements versus observation, comparison, and correlation; scholarly application of research methods by members of the class. Credit, 3.

Assistant Professor CUTLER.

179-180. SEMINAR.—The seminar described under Sociology 79, and 80. Graduate students render reports on research in which they engage, and upon selected portions of current sociological literature. The reports serve as the basis for general discussion. Credit, 3.

Professors MACKIMMIE and CUTLER.

182. SOCIAL CONDITIONS OF AMERICAN LIFE.—Social and economic factors in progress; income and life; standards of living. Credit, 3.

Assistant Professor CUTLER.

183. SOCIAL CONDITIONS OF OLD WORLD LIFE.—A sociological investigation of life in Europe, the Orient, and the Far East; co-operative enterprise in Denmark; agriculture in China after one hundred twenty generations; racial traits. Credit, 3.

Assistant Professor CUTLER.

184. INSTITUTIONS OF BUSINESS AND INDUSTRY.—Forms of business organization. Farming, markets, business cycles, and business forecasting. Credit, 3.

Professor MACKIMMIE.

185. ORGANIZATION OF PUBLIC AND PRIVATE FINANCE.—Corporate finance; taxation and taxation problems; banking; and credit. Credit, 3.

Professor MACKIMMIE.

186. FARMERS' ORGANIZATIONS.—A study of social and economic co-operation. Credit, 3.

Assistant Professor CUTLER.

187. TOWN AND VILLAGE LIFE.—The agricultural village; the small town in relationship to its environing neighborhoods; rurbanization; part-time farming. Credit, 3.

Assistant Professor CUTLER.

188. THE MODERN CITY.—A survey of industrial and mercantile centers with their problems of poverty, health and sanitation, planning and zoning, the "unearned increment," and disrupted primary groups; the social, administrative and economic organization of cities; metropolitan planning. Credit, 3.

Assistant Professor CUTLER.

189. UTOPIAS AND OTHER SOCIAL MOVEMENTS.—A study of utopias in literature and in fact; the literature of rural life; contemporary social movements. Credit, 3.

Assistant Professor CUTLER.

190. LOCAL GOVERNMENT.—Proposed improvements in local government. Credit, 3.

Assistant Professor CUTLER.

191. COMMUNITY LEADERSHIP.—Qualities and methods making for successful leadership. Credit, 3.

Assistant Professor CUTLER.

192. SOCIAL CONDITIONS IN THE CARIBBEAN REGION.—A sociological study of life and industry in the American possessions and protectorates; relation of the West Indies to the United States; the peon mind. Credit, 3.

Assistant Professor CUTLER.

193. THE LEAGUE OF NATIONS.—Social and agricultural problems in their international aspects. Credit, 3.

Assistant Professor CUTLER.

200. **THESIS.**—Upon an approved subject, and must be a valuable contribution to knowledge. Especial stress is laid upon the feature of originality in the case of candidates for the doctorate.

Credit, for master's degree, 5; for doctor's degree, 33.

Veterinary Science.

COURSES FOR MINOR CREDIT ONLY.

75. **COMPARATIVE VETERINARY ANATOMY.**—The structures of the horse, cow, sheep, and pig are studied.

3 lectures a week.

Credit, 3.

76. **GENERAL VETERINARY PATHOLOGY.**—The principles of pathology and their application as related to diseases of domesticated animals.

3 lectures a week.

Credit, 3.

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